GAS JOURNAL

LIGHT ⁘ HEAT ⁘ POWER ⁘ BYE-PRODUCTS

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Editorial Notes.

Forcible Feeding.

THE war and its effects resulted in a big shortage of houses; and large sections of the community suffered grievous hardship thereby. The situation in this respect is now greatly eased; and thanks are in a measure due to various public bodies who have bestirred themselves in the direction of providing living accommodation. The premises thus erected have become known as "council houses," and have been in keen request among those desirous of paying a modest rent. Successful applicants esteem themselves fortunate; and so they are—unless their privileges be too dearly bought. That this is possible, has been shown on sundry occasions in the pages of the "JOURNAL;" and it is the source of real regret to us to find these instances added to.

There may, of course, be some proper explanation; for on the face of it, the position of affairs against which the Chairman of the Barnsley Gas Company (Mr. E. G. Lancaster, J.P.) protested at the annual meeting constitutes an intolerable interference by the Corporation with the liberties of the tenants of their houses. It is true that the Corporation do not dictate to the tenants in the matter of the butcher they shall patronize, or of the brands of beer or whisky to which they shall confine themselves. They do not even say what cut of clothes the tenants shall wear, or which place of worship they shall attend. No; in these matters the tenants enjoy freedom; so that they are not wholly slaves. But in another direction their choice has been amazingly tampered with. Here we have the essence of the matter, as reported on a later page: The Barnsley Corporation in their housing schemes, according to Mr. Lancaster, have spent vast sums of the ratepayers' money in building about 2000 houses; and they have told their tenants they should use only electric light in their houses. Many tenants prefer to have gas for cooking purposes, as well as electric light. To prevent this, the Corporation have issued the following notice to municipal tenants:

> "In no circumstances must you permit gas to be installed in your premises. If this is done, it will be regarded as a breach of the conditions of your tenancy, and the Council will be compelled to serve notice to quit, and take steps to obtain possession of your house."

Why on earth should people, just because they inhabit "council houses," be debarred the use of the most popular—and, as we believe, the best—method of cooking and smokeless warming? Is gas less desirable in a "council house" than it has proved to be elsewhere? And what sort of a competitor is it that must resort to tactics of this nature to increase its business? To these pertinent questions we do not expect an answer; but we hope they will be pondered over, and that the national organization of the gas industry will leave no stone unturned to rectify a situation of such manifest unfairness. We wonder the electricians themselves do not make an effort to end tyrannical propositions of this character; for "forcible feeding" with current can hardly conduce to the greater popularity of electricity. Rather, indeed, is it calculated to render it distasteful. Such a policy, too, constitutes a crushing indictment of what is termed municipal trading.

Restless Tenants.

THOUGH not in any way on "all fours" with it, the flagrant case detailed above reminds us of an article which appeared in this part of the "JOURNAL" on July 31 last. Therein mention was made of the fact that a deputation from the tenants of certain of their council houses had waited upon the Walton-on-Thames Urban District Council with a petition that the Council should provide a secondary means of cooking—a gas meter and cooker to be installed in each house free of charge to the tenants. "This," said the petition, "in our opinion, is essential "to the health and well-being of the tenants, as the con- "ditions now are appalling, and a disgrace to the present- "day standard of living." In this case, coal ranges are provided in the kitchens, which serve as living-rooms; and gas, it was urged by the deputation, provided the only means of secondary cooking which the tenants could entertain, "since their money would not run to electric cooking." In this instance the Council had seemingly considered the matter in the first instance, as the original scheme provided for electricity for lighting and gas for cooking, but the Ministry of Health gave them the choice of one or the other, and would not sanction the expense of both services. At the time, the Council thought it preferable to have electricity for lighting, and to defer the question of gas cooking. Events have shown that this decision was a wrong one. If only one service was permissible, gas should have been chosen, as this would have placed within reach of the tenants a faultless method of cooking. At Walton-on-Thames (where the Urban Council have also become the owners of the electricity supply undertaking), electric cooking is regarded by tenants of the council houses as "right outside the working man's "pocket." What is the position at Barnsley?

To continue the story of Walton-on-Thames, it should be said that at their meeting following the deputation the Council favoured the petition in a modified form, and offered to supply electric cookers to those tenants who might wish to take them; the idea being, after a trial period, to circularize the tenants as to their preference for electric cookers or gas cookers. This did not by any means satisfy the tenants, 95 p.ct. of whom had already petitioned asking for gas cookers; and they held another meeting. At this, one tenant, citing the experience of a cook that the preparation of a meal on an electric cooker cost 2s., asked why it was that the Council wanted to

force electric cookers upon the tenants. It was pointed out in reply that the Council owned the electricity undertaking, and so it was up to them to push their own commodity. On the other hand, it was reported that a Sub-Committee of the Council had visited other of their houses on a different estate, where electric cookers had been fitted, and found the tenants quite satisfied. As to this, it was remarked that the Sub-Committee went to houses where there were no families, or families numbering but three or four, because for larger families electric cookers would not do. It was averred, and assuredly with the best of reason, that there was not one in fifty of the more affluent householders in Walton who used electric cookers. Has, indeed, such a percentage been reached anywhere? Finally it was decided that the deputation should again approach the Council.

In this case, as in that of Barnsley, the tenants should have that method of cooking which is best suited to their needs, and the owners of the electricity undertakings should secure their custom in accordance with customary business principles. Where council houses are provided in the first instance with gas cookers, there is no risk of subsequent dissatisfaction.

Monthly Gas Bills.

READERS do not need to be reminded of the fact that the South Metropolitan Gas Company have for some little time had in operation a successful system of monthly account rendering and collecting—so successful, indeed, that the Board of the South Suburban Gas Company subsequently decided that the method should be applied over the whole of their area as soon as the necessary arrangements could be made. Equally well known is it that the plan of handling bills monthly is now general practice in the United States. Some of the arguments in favour of this course, as they appear to us, were pointed out in the editorial columns of the "JOURNAL" during the early part of the present year; and the matter was again brought to mind when referring, two or three weeks ago, to the methods adopted by the Portland (Maine) Gas Light Company for familiarizing customers with meter reading.

So that we might learn something of this Company's views, we approached Mr. Burton Smart, the Treasurer, who, for the benefit of our great industry, has courteously forwarded some details of the experience of the undertaking in handling their bills monthly, which they have done for the last fifteen years or more. Under this system, all the meters of the Portland Gas Company (about 15,000), with the exception of those of some 100 weekly customers, are read monthly, on the same date each month. They are divided into twenty-four regular zones; and the work is done by three high-grade meter readers. Another reader has charge of the weekly customers, who are bakers, small hotels, restaurants, and a few other large users. Each man reads about 200 meters daily for 24 days every month, providing the clerical staff with 600 meter readings to bill each day and the same number of consumers paying their accounts. This makes every day's work alike. The deposits daily are about the same; and there is no night or Sunday labour. The bills are smaller in amount, and thus easier for the customers to pay, which is pleasing to them—especially if they are housekeeping on a monthly budget system, as is now quite a usual proceeding in New England.

The Company have, at the suggestion of the State Public Utility Commission, also done away with the discount hitherto allowed for prompt payment; and greatly to the surprise and pleasure of the officials, this retarded payments only for a few months, while it has removed innumerable petty disputes about forfeited discounts—making the relations between the Company and the consumers just so much more agreeable. The new system tends to bring the consumers much more often to the Company's offices (a part of which is the appliance display and sales rooms); and business is thereby increased. The percentage of loss, too, is now less annually than before. Finally, there is avoided the confusion which used to arise at certain periods through overlapping of work.

National Savings Movement—Important New Thrift Schemes.

IN a leading article which appeared in our issue of Aug. 7 we referred to Mr. Philip Snowden's striking speech at the National Savings Assembly at Bournemouth. In that speech Mr. Snowden whole-heartedly backed-up the National Savings Movement as an organization working for the security of savings and for the inculcation of the practice of thrift. We learn that the Duke of York also paid a special visit to the Assembly, to express his admiration for the work of the National Savings Movement.

This Movement has recently brought out some extremely important and interesting new Industrial Thrift Schemes, which we feel sure will play an increasingly prominent part in the life of the community. These schemes merit the closest attention of all in our great industry. Particulars have already been circulated to all gas companies by the Federation of Gas Employers; and as many of our readers are therefore doubtless conversant with them, we do not propose now to go into details.

It is interesting to know that a number of gas companies have adopted the schemes, which are regarded as of the greatest benefit both to the employers and to the employees. Their great merit is that they can be readily adapted to meet the particular requirements of companies desirous of helping their employees to make provision for the future and for retirement and disablement. One scheme combines the merit of insurance with that of long-term thrift, through the medium of Savings Certificates; and the other will be found particularly useful in the case of small staffs, where provision cannot be made on a large scale for the retirement and disablement of employees. It is just as applicable, of course, to the employees of large undertakings. In both cases the scheme is very suitable for the formation of retirement, disablement, and long-service funds.

The National Savings Committee, Sanctuary Buildings, Westminster, London, S.W. 1, have issued an attractive and instructive booklet regarding these schemes; and we have arranged that a copy of this booklet shall be sent to any of our readers who apply for it. It is only necessary to send a post-card marked "O.H.M.S." to the address stated above, and a copy of the booklet will immediately be sent. No postage need be paid on the card.

Gaseous Therms from Oil.

"WITH regard to the results of other investigators, this "work fits well into place, and serves to make more "complete the general picture of this branch of hydro-"carbon chemistry which was so extensively developed by "Whitaker and his co-workers." This is the concluding paragraph of an admirable study on the valuation and cracking of gas oils carried out in the laboratories of the Gas Light and Coke Company by Mr. R. H. Griffith, on the suggestion of Mr. H. Hollings, Chief Gas Chemist to the Company; and those who study the work, which is published in a recent issue of the "Journal of the Society of Chemical Industry," will agree with the author's claim. At the annual meeting of the Institution of Gas Engineers in 1928, Mr. Hollings described laboratory experiments on the thermal yields of gas resulting from oil cracking, and pointed out that in carburetted water gas plants as at present designed there is probably insufficient checker-brick area, and that consequently they work at their highest efficiency, from the oil cracking point of view, only when using comparatively small quantities of oil and producing a gas of low calorific value.

The results obtained by Mr. Griffith point in the same direction. His small-scale experiments on the influence of cracking temperature and the rate at which oil vapours pass through the cracking zone were followed up by trials on two carburetted water gas sets of the same type but of different size; and it is important that the findings on the large scale thoroughly vindicate the work in the laboratory and the inductive method of considering plant operation. Mr. Griffith clearly demonstrates the influence of the rate of oil input at different temperatures and with

more than one oil. He finds that the yield of gaseous therms per gallon rises to a maximum and then decreases steadily, and that the lower values obtained at very low speeds are not due to decomposition of gaseous hydrocarbons to carbon and hydrogen, but to hydrogenation reactions. It is, he suggests, a comparatively simple matter to control oil efficiency over a very wide range of enrichment simply by alterations in the time of oil feed. This can be done on most plants without any special equipment.

Temperature changes cause considerable differences in the efficiency of gas-making; and in every case examined by Mr. Griffith, the best temperature was between 750° and 760° C. He states that there can be no doubt that in water gas practice the most important factors in the efficiency of oil cracking are the rate of oil feed and the temperature of the carburettor and superheater; and he puts forward the opinion that, once the possibilities of a plant have been explored—which ought not to be a laborious process—it is possible to use a fixed thermocouple at any particular spot as a working guide for temperature control. Poor cracking results are obtained above or below the optimum temperature; but what precisely this temperature is depends, of course, on the temperature gradient throughout the carburettor and superheater.

Other phases of the investigation included the valuation of oils for gas-making, and the quantity and quality of the tar produced under different conditions. Regarding the former, the author explains that examination of a large number of samples of oil from different sources has shown that it is possible to evaluate an oil by a chemical analysis. The method he outlines requires no special apparatus, can be carried out as an ordinary routine test, and enables the formulation of an opinion as to the suitability of a sample within twenty-four hours. It is remarkable, observes Mr. Griffith, how closely the predictions of Ross and Leather, based on physical examination the oils, coincide in essentials with the information provided by chemical methods. At the same time it must be emphasized that chemical analysis is not only less laborious than physical examination, but is capable of giving numerical results directly comparable with one another, and is based on comparative tests performed under strictly regulated conditions. As for tar composition, it is obvious that much more extensive work in the direction indicated by the author is highly desirable. His present findings may be summarized thus: As the rate of oil feed is increased, the yield of tar falls quickly to a minimum and then remains practically unchanged; the paraffin content (substances not dissolved in sulphuric acid) is very high at low rates of oil feed; the naphthalene content of the tar reaches a maximum at the same time as the yield of therms per gallon is the highest; and the pitch content rises with increased oil rates.

Privately-Owned Wagons.

The subject of privately-owned railway wagons, which is dealt with in an article on a later page, reproduced from the "Chamber of Commerce Journal," is of topical interest, inasmuch as the report of the Joint Committee on Mineral Transport—set up in 1927 to examine the subject—is expected shortly. Referring to this, the Lord Privy Seal (Mr. J. H. Thomas) stated on July 3 in the House of Commons that the problem of private wagons is one which must be faced, and faced very effectively, by the Government, as soon as the report of the Committee is received.

Unsightly Advertisements.

It pays to advertise properly—that is, to secure attention in the desired quarter; but when compelled, both in town and out of town, to gaze at every turn upon some blatant business announcement, one wonders how much money must in the course of a year be poured into profitless channels. Advertising is expensive; and while it is admittedly difficult to trace direct results, there must be vast numbers of unsightly hoardings plastered all over this beautiful country of ours which do not pay those who have to foot the bill for their keep. Would that the fact were easier of proof! It will be realized in time, no doubt; and until that time arrives, we shall probably have to bear with the infliction, for there is little likelihood of the example of the Egham Urban District Council being of general benefit. This body, with a view to stopping the indiscriminate posting of advertisements by newspapers and racing tipsters in their area during Ascot week, made by-laws under the Advertisements Regulation Act, 1925, under which certain roads, including Egham Hill, on the main Ascot road, were scheduled as rural—such advertisements being barred. The first victim has been called upon to pay about £4 (including costs), for exhibiting in his garden a banner "bearing a strange device," in the interests, strangely enough, of "certain newspapers!"

Payment for Holidays.

Among the improvements in working conditions sought by various trade unions in the years immediately following the war was the granting of holidays (in addition to public holidays) with pay. Success was, however, secured only in certain industries; and a correspondent writing in the Trade and Engineering Supplement of "The Times," expresses the view that for the next few years it is probable that the extension of the granting of pay for holidays must be postponed. It is estimated by the Ministry of Labour that about 1½ millions of manual wage earners (apart from clerks, shop assistants and other salaried employees) are covered by the general and district agreements that have so far been negotiated. It appears that the great majority of the wage earners in many of the largest industries are not paid for holidays. For example, a list of agreements quoted by the "Ministry of Labour Gazette" makes no mention of the engineering, shipbuilding, building, or iron and steel trades, or coal mining, except for deputies in some districts. Where agreements exist, payment is usually made for one or two weeks' absence, but only after a qualifying period of service, which is generally six or twelve months. In some cases, too, the length of the holiday varies with the period of service. Payment is usually made at the normal time rate; and in the case of piece-workers average earnings are frequently taken as a basis. In the majority of instances the worker makes no contribution to the holiday fund; but a notable exception is the boot and shoe industry, in which employers and workers make equal contributions throughout the year. The trade unions have not abandoned hope of the extension of holidays with pay; and the subject has been mentioned as one of the aims of the Miners' Federation.

In Other Countries.

It is pointed out by the correspondent in question that the system of payment for holidays is not confined to this country. In America it is widespread; and in Germany agreements which omit to make provision for such payment are exceptional. Generally speaking, however, in Germany the period of the holiday is shorter than in England; being only three days in 50 p.ct. of the agreements. One of the most important agreements in Italy—that for the metal and engineering industries—provides for six days' holiday with pay after twelve months' service. In Czecho-Slovakia holidays with pay are compulsory by law; the period being six days after a year's service, rising to eight days after fifteen years' service.

FORTHCOMING ENGAGEMENTS.

Sept. 9.—GAS COMPANIES' PROTECTION ASSOCIATION.—Committee Meeting, 5, Victoria Street, S.W., 2.30.

Sept. 9-12.—ASSOCIATION OF PUBLIC LIGHTING ENGINEERS.—Conference at Bournemouth.

Sept. 12.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual Meeting at St. Andrews.

Sept. 18.—WALES AND MONMOUTHSHIRE DISTRICT INSTITUTION OF GAS ENGINEERS.—General Meeting at Porthcawl.

Sept. 18-19.—CERAMIC SOCIETY.—Refractory Materials Section Meeting, Midland Grand Hotel, St. Pancras.

Sept. 19.—SOCIETY OF BRITISH GAS INDUSTRIES.—Council meeting in the afternoon.

Oct. 4.—MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.—General meeting.

Oct. 28-30.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual Conference at Eastbourne.

Nov. 20.—SOCIETY OF BRITISH GAS INDUSTRIES.—Autumn General Meeting, Hotel Metropole.

PERSONAL.

The Clerk to Accrington District Gas Board, Mr. A. H. AITKEN, is retiring from the position on Sept. 30. He has been Clerk to the Board since its formation in 1904, and he will be succeeded by Mr. W. H. WARHURST, the Town Clerk of Accrington.

Mr. THOMAS COOPER, a well-known Buxton tradesman, who for over 40 years has been Chairman of the Tideswell Gas Light and Coke Company, has resigned his position, and he is succeeded in the Chairmanship by Mr. WILLIAM DAKIN, whose family have been connected with the Company since its inception.

Mr. REUBEN ALFRED HEPWORTH (75), of the Woodlands, Holmes Chapel, and formerly of 391, Waterloo Road, Cheetham, Manchester, late Managing-Director of Messrs. R. & J. Dempster, Ltd., left £78,833.

The late Mr. W. A. Walker has been succeeded on the Board of the Chichester Gas Company by Mr. T. N. RITSON, Assoc.M.Inst.C.E., who has resigned his position as Engineer and General Manager of the Company after fifteen years' service in that capacity. Mr. W. ELLIS, who has been appointed General Manager in Mr. Ritson's place, has had a lifelong connection with the Company.

OBITUARY.

THOMAS SYDNEY FLETCHER GIBSON, M.INST.C.E.

It is with deep regret that we have to announce the death at his home, Normandy Lodge, Vanbrugh Park Road West, Blackheath, S.E. 3, on Aug. 28, of Thomas Sydney Fletcher Gibson, M.Inst.C.E., Chief Civil Engineer of the South Metropolitan Gas Company, at the age of 59.

Mr. Gibson was born at Long Sutton in 1870, and his first employment was on contracting work with his father, the late Thomas Gibson, Assoc.M.Inst.C.E., of Westminster. He entered the service of the South Metropolitan Gas Company in 1895, and was appointed Works Superintendent at Old Kent Road in 1900. He was in charge of a considerable amount of constructional work on special plant that was erected by the Company during the war. In 1920, he was appointed Chief Civil Engineer, which position he held at the time of his death. By the death of Mr. Gibson the South Metropolitan Gas Company have lost a distinguished officer of great ability; and all connected with the Company mourn the passing of a close friend and valued colleague.

The funeral was at Shooters Hill Cemetery, S.E., last Friday. Mr. Gibson leaves a wife, two daughters, and a son, who is with the Company. To them we tender sincere sympathy in their bereavement.

KARL FREIHERR AUER VON WELSBACH.

"On the passing of your husband, the inventor whose achievements made his name famous throughout the world, I offer to you and your family the deepest sympathy. In the deceased, Austria mourns one of her great sons."

This message, addressed to his widow by the President of the Austrian Republic, was among the last honours paid to Auer von Welsbach, who died at his castle in Kärnten at the beginning of August. As tribute to a man who made history in our industry, we cannot do better than place on record a few of the biographical details from the obituary notice dedicated to his memory by the German Gas Association, of which he was a Member of Honour ["Das Gas- und Wasserfach," Aug. 24].

Welsbach's great achievement, which connects his name for all time with the gas industry—the discovery of incandescent gas lighting—was not won without a struggle. The story of his early efforts can still be read in the paper which he gave to the sixteenth annual meeting of the German Gas Association in Vienna in 1901. In his studies of the chemistry of the rare earths an important part was played by investigations of the spectroscopes of the light emitted by the earths in a glowing state. As the use of small quantities on platinum wire did not suffice for the production of strong spectra, Auer tried the effect of soaking cotton fabrics with their salts and reducing them to ash. The experiment succeeded; and the substance formed on the destruction of the fabric by the flame showed coherence—a fact which was greeted with scepticism by all to whom Auer related his experience, including the great Bunsen, under whom he studied. In his further efforts to reduce the earths to a form suitable for the production of light, he hit upon a substance, lanthanum oxide, which revealed exceptional luminosity, and, after further experiments, led to the idea of using the rare earths in general for the production of light. The way, however, to the achievement of this object proved a long and thorny road. The lanthanum oxide mantle was excellent at first; but it fell to dust after a very short time. By mixing the oxides of lanthanum and magnesium, Auer made the first incandescent mantle which promised practical success; but even then he was doomed to disappointment, as 70 hours proved to be the limit of its useful life.

Further experiments with zirconium oxide mixtures gave better results; but it was only when he tried thorium oxide that Auer obtained a durable mantle of high light intensity, which he demonstrated before members of the Vienna Press in 1885. Even so, his results were given a very mixed reception, even in the technical circles of the gas industry. An important representative of the lighting side, whom it was hoped to interest in the new departure, declared outright that he could have nothing to do with it, as his firm dealt only with serious matters.

And, indeed, success was not yet. The first factory in Atzgersdorf had soon to be closed, and the hopes of those who financed the invention were dashed, as the illumination from the thorium oxide mixtures did not last longer than 50 or 60 hours. So Auer set to work untiringly once again. He discovered that pure thorium oxide in itself was of little illuminating value, but that it was other substances, or, so to speak, impurities, which gave the luminosity. This led to the mixing of 1 p.ct. of cerium oxide with 99 p.ct. of thorium oxide, which was found to increase enormously the life of the mantle; and from this point the triumphant progress of incandescent gas lighting began. Von Welsbach can well be said to have been the saviour of the gas industry, which, up to the time of his inventions, had nothing with which to compete with the Edison carbon filament electric lamp; while the other uses of gas, as we know them to-day, were at that time comparatively in their infancy.

No record of Auer von Welsbach can begin and end at his work for the gas industry. His researches with the rare earths led in 1905 to the reduction of ytterbium into two new elements. The development of pyrophorous alloying gave rise to a new industry—that of ceric iron, which has attained considerable importance. As early as 1898, he showed the electrical illuminating industry the way to much of its present-day success when he invented the osmium lamp. From this came all later developments of the metal-filament lamp, even the Wolfram lamp, the beginnings of which were based upon the process by which Auer had arrived at the osmium filament lamp.

He was the first holder of the Siemens Ring—a distinction which was voted to him in general meeting of the German Gas Association. It is impossible in a short note even to touch upon all the honours which fell to him. He was Hon. Dr. of the technical universities of Vienna, Graz, and Karlsruhe; Hon. Senator of the University of Heidelberg; a member of the Academies of Science of Vienna, Berlin, and Stockholm; Member of Honour of the Austrian Chemical Society and of the German Gas Association, which awarded him the Bunsen-

Pettenkofer Tablet. He also received the high rank of Freiherr of the Austrian Empire.

As a man, he was held in the highest esteem. With the wealth which his inventions brought him he was always open handed, as is testified by innumerable foundations which are due to his generosity, both for the advancement of science and for many other purposes.

The death is announced, at the age of 53, of Mr. ROBERT ALEXANDER MORRISON, Secretary and Director of Messrs. Stewarts & Lloyds, iron and steel manufacturers, of Glasgow. He was appointed Assistant Secretary of the firm about 25 years ago, becoming Secretary four years later.

The death occurred on Aug. 23, at Brighton, of Mr. W. A. WALKER, for many years the Engineer and Manager of the Worthing Gas Company, and for some 28 years a Director of the Chichester Gas Company, of which 18 were in the capacity of Chairman. Mr. Walker always took a very keen interest in the affairs of the undertaking, and his loss will be deeply felt. A fitting tribute to his work was paid by Mr. Joseph Cash in his address to the shareholders of the Chichester Company at their half-yearly meeting, a report of which appears in later pages of this issue. Mr. Walker died in his 78th year. He was appointed Engineer and Manager of the Worthing Gas-Works in 1884; and during the 30 years that he held the position there was an almost complete reconstruction of the works, from his own designs, and without any expenditure whatever for professional aid. Acknowledgment of the value of Mr. Walker's services in this and other respects was made by the then Chairman of the Board of Directors (Mr. H. H. Gardner), when he announced the retirement in August, 1914.

GAS STOCK AND SHARE MARKET.

[For Stock and Share List, see later page.]

DISTINCTLY dull conditions developed in most of the stock markets last week, the continued outflow of gold from the Bank of England and the prospect of an early rise in the Bank Rate being jointly responsible. Gilt-edged securities generally fell off in price, but the improved political position at the end of the week acted as a slight check to the decline. The successful termination of The Hague "reparations" conference also brought about some improvement in European loans, but it had no appreciable effect on the volume of business.

In the Industrial Market, spasmodic activity was noticeable in American favourites, but otherwise there was a feeling that both transactions and values would decrease further.

In the Gas Market, Imperial Continental capital stock again attracted the most business, and a material rise of 25 points to 405-425 was shown on the week, one parcel of stock changing hands on Friday at the latter price. Cardiff consolidated rose 3 points to 98-101, and there was a slight improvement of ½ point in Bristol ordinary at the local exchange. It will be noticed that Derby cons. rose 5 points *ex div.*, while no change in price took place in the case of several other stocks which became *ex div.* on Friday last.

The European Gas Company has declared an interim dividend of 2 p.ct. free of tax, the same as a year ago.

The following transactions were recorded during the week:

MONDAY.—European 16, 16¼, Gas Light and Coke 18s. 4½d., 18s. 7d., 18s. 9d., 4 p.ct. preference 73¾, 74, Imperial Continental 385, 389, 390, 393, Montevideo 106¼, North Middlesex 6 p.ct. 105½, Plymouth and Stonehouse 5 p.ct. 111, South Metropolitan 101¼, Tuscan 36s. Supplementary prices, Tonbridge new "E" 179.

TUESDAY.—Brighton and Hove 5 p.ct. 100½, Cardiff 99¾, Gas Light and Coke 18s. 4½d., 18s. 6d., Imperial Continental 385, 390, 391, Primitiva 35s. 9¾d., South Metropolitan 101½, 102, Tottenham 3½ p.ct. 107, Tuscan 39s., Wandsworth "C" 102, Wimbledon 5 p.ct. 115, new ordinary 102. Supplementary prices, British, Hull 3½ p.ct. debenture 61, Hull, Norwich 3½ p.ct. debentures 61, Lea Bridge 5½ p.ct. preference 81.

WEDNESDAY.—Barnet 7 p.ct. 114½, Bristol 5 p.ct. 88½, British 5 p.ct. debentures 96½, Commercial 94⅜, 94½, 95, 3 p.ct. debenture 55½, Gas Light and Coke 18s. 3d., 18s. 4½d., 18s. 6d., 3½ p.ct. max. 61½, 4 p.ct. preference 73¾, 75, Imperial Continental 385, 386, 388, 390, 392, Newcastle 3½ p.ct. 16s. 10½d., Primitiva 35s. 4½d., 35s. 10½d., South Metropolitan 101½. Supplementary prices, Reading 5 p.ct. 83, 83½, Yorktown and District 5½ p.ct. debenture 97.

THURSDAY.—Cape Town and District 4½ p.ct. preference 6⅞, Gas Light and Coke 18s. 4½d., 4 p.ct. preference 74, Hong Kong and China 14¼, Imperial Continental 390, 391, 391½, 394, 395, 396, 397, 398, South Metropolitan 100¾, 101½, Tottenham 3½ p.ct. 107. Supplementary prices, Lea Bridge 5½ p.ct. preference 83, Ventnor 10 p.ct. 19, 19½, new 7 p.ct. 13⅜, 13½.

FRIDAY.—Bristol 5 p.ct. 88, Cape Town 4½ p.ct. preference 7½, Commercial 94, Gas Light and Coke 18s. 3d., 18s. 4½d., 18s. 6d., 4 p.ct. preference 73½, 5 p.ct. debenture 99, 99½, Hong Kong and China 14½, Imperial Continental 399, 400, 401, 402, 403, 404, 405, 408, 410, 411, 412, 413, 414, 415, 417, 418, 420, 422, 425, Newcastle 3½ p.ct. 16s. 7½d, 4 p.ct. preference 71, Oriental 118½, Primitiva 36s., 4 p.ct. consolidated debenture 82, South Metropolitan 101½. Supplementary prices, Southgate and District 5 p.ct. preference 85.

In Lombard Street, the customary week-end ease was apparent in the short loan market, and money for the night was freely offered at 4 p.ct., balances being available at even lower rates towards the close. The discount market was exceedingly firm, and, as a rule, brokers obtained 5½ p.ct. for full three months' bills. There was a slight advance of 1·82d. p.ct. in the Treasury Bill average rate to £5 9s. 8·87d. p.ct., and, as was expected, the Commonwealth Government had to pay a high rate for the temporary accommodation required, the average being £6 3s. p.ct.

The feature of the Foreign Exchange Market was the rise in the French rate to 123.91. The American dollar was slightly easier and closed at 4.84⅛. Belgian and Italian exchanges moved in favour of sterling to 34.86⅞ and 92.68¾ respectively; Spanish pesetas finished at 32.91; German marks at 20.36¼ and Dutch florins at 12.00¾.

Silver was sold on Chinese account, and the price declined to 24¼d. per oz., Gold remaining at the nominal price of 84s. 11½d. per oz.

The Bank Rate is 5½ p.ct., to which it was raised from 4½ p.ct. on Feb. 7. The Banks' deposit rate is 3½ p.ct., and the deposit rates of the Discount Houses are 3½ p.ct. at call and 3¾ p.ct. at notice.

Weyman Memorial Fund.

In a report to the subscribers, signed by Prof. A. Smithells (Chairman), Dr. E. W. Smith (Hon. Secretary), and Mr. T. F. E. Rhead (Hon. Treasurer), it is stated that the sum subscribed to the fund amounts to £822. The Trustees are Mr. Stanley Smith, of Gateshead (brother of Mrs. Weyman), Mr. Frank P. Tarratt, of Newcastle-upon-Tyne, and Dr. E. W. Smith, of London; and they are to act until Dec. 31, 1943. The beneficiaries under the trust are Dr. Weyman's three children; and the administration of the fund is left to the absolute discretion of the Trustees to apply the interest, and if they desire the capital also, for the maintenance, well-being, education, advancement, or benefit of any or all of these children. Should there be any part of the trust fund left over on Dec. 31, 1943, or upon the previous death of the last survivor of the children, such part is to be made a contribution to the Benevolent Fund of the Institution of Gas Engineers.

Institution Telephone Number.—The telephone line of the Institution of Gas Engineers will be transferred to the Sloane Automatic Exchange on Saturday, Sept. 7, after which the number will be Sloane 8912.

Society of British Gas Industries.—The Autumn General Meeting of the Society will be held at the Hotel Metropole, London, on Wednesday, Nov. 20, under the Presidency of The Right Hon. Lord Cecil of Chelwood.

Gas Companies' Protection Association.—A meeting of the Committee of the Association is to be held at the offices, 5, Victoria Street, London, S.W. 1, on Monday next, Sept. 9, at 2.30, when various matters of importance to the industry at the present time are to be discussed.

Wales and Monmouthshire Institution.—Owing to unforeseen circumstances, the meeting of the Wales and Monmouthshire District Institution of Gas Engineers and Managers at Porthcawl has been fixed for Wednesday, Sept. 18, instead of the following day, as previously arranged.

Ceramic Society (Refractory Materials Section).—The 21st meeting of the Refractory Materials Section of the Ceramic Society will be held in the Midland Grand Hotel, St. Pancras, on Wednesday and Thursday, Sept. 18 and 19. Among the contributions promised are "Some Notes on an American Trip" (illustrated by lantern slides and cinematograph film), by Mr. F. West; and a paper on "Tunnel Kilns," by Mr. A. N. Tarrant. The official banquet will take place on the Wednesday, at the Hotel Cecil, Strand.

POTENTIAL INVESTMENTS.

XXIII.—Southampton Gas Light and Coke Company.

The Southampton Gas Light and Coke Company was incorporated by Special Act in the year 1848, additional powers being obtained by Acts in 1865, 1876, 1898, and 1906, and Orders in 1921 and 1925. The Head Office is at 66, Above Bar, Southampton. The statutory area of supply covers 90 square miles, and, in addition to the town of Southampton, includes the towns and villages of Totton, Bitterne, Redbridge, Eastleigh, Bishopstoke, Chandlersford, West End, Netley, Ashurst, Lyndhurst, Hedge End, Botley, Hamble, Lowford, and Bursledon. The services number 46,794, and there are over 287 miles of mains.

The capital of the Company, as shown by the last accounts (December, 1928), is as follows:

CAPITAL STOCKS.

	£
Ordinary stock	647,740
Premiums received	28,290
	£676,030
Remaining to be issued	217,970
Total amount authorized	£894,000

Additional premiums received on sale of shares, £38,459.

LOAN CAPITAL.

	£
4 p.ct. debenture stock	121,275
7 ,, redeemable debenture stock (1931)	100,000
5 ,, ,, ,, ,, (1935)	55,000
5 ,, ,, ,, ,, (1947)	61,740
	£338,015
Remaining to be borrowed	108,985
Total amount authorized	£447,000

Additional premiums received on debenture stock, £13,850.

Transfer Arrangements.—Common form. Registration fee; any document, 2s. 6d. All classes of stock allowed (in multiples of £10) on same deed (fee, 2s 6d. each class). Spouse may witness husband's signature. Voting—1 vote for every £200 ordinary stock up to £2000; 1 for every £400 beyond up to £4000; and 1 for every £500 beyond £4000.

Accounts and Dividends.—Accounts are made up to Dec. 31, and submitted in February, an interim dividend being paid about September. Dividends are not subject to sliding scale. The maximum price of gas is 1s. 4⅔d. per therm; present price, 9¼d. per therm; declared calorific value 460 B.Th.U. per c.ft.

The following table illustrates the progress made by the Company during the past four years:

Year.	Price of Gas as at Dec. 31.	Quantity Sold.	Net Capital Employed per Therm.	Gross Profit. (*a*)	Total Charge for Capital. (*b*)	Rate of Dividend P.Ct. per Annum.	Amount Carried Forward and Balance Reserve Fund.
	d.	Therms.	s. d.	£	£		£
1925	11·37	5,652,430	3 1·2	49,748	46,368	5	36,923
1926	14·20	5,963,917	3 0·7	47,649	50,431	5	37,258
1927	11·37	6,075,131	3 1·0	56,870	50,596	5	44,648
1928	9⅔	6,402,656	2 11·0	57,660	55,933	5	52,429

(*a*) After deduction of income-tax.
(*b*) Including amount (if any) placed to reserve fund.

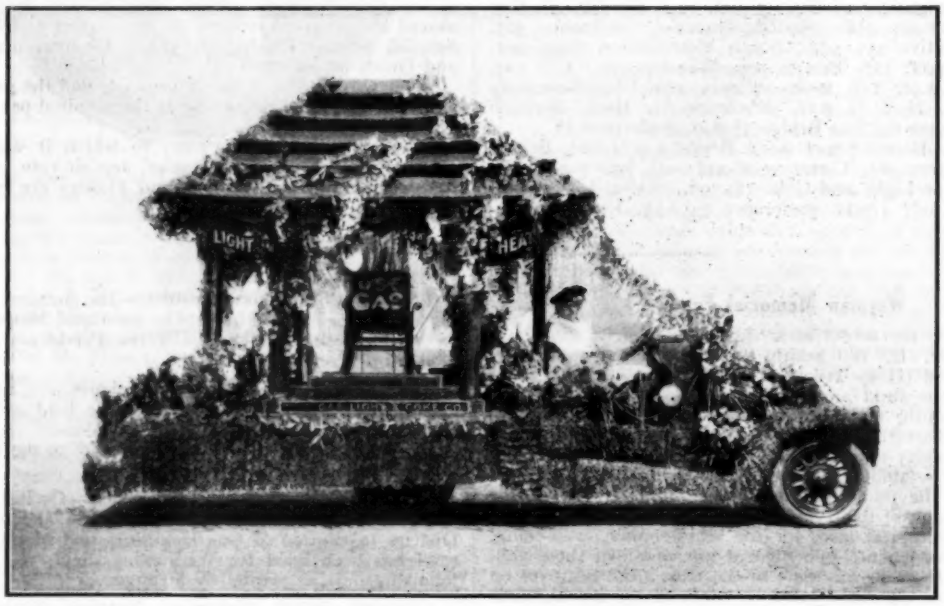
It will be seen that the sales of gas are steadily increasing, those of the year 1928 being over 13 p.ct. above the sales in 1925. In addition, the carry forward and reserve fund has increased during the period of three years from £36,923 to £52,429.

Though the Company's statutory powers do not permit an increase in the dividend beyond 5 p.ct., the ordinary stock is attractive by reason of the secure position. The transactions are not numerous, and it will be seen from the following table that there is very little variation in the market price:

Year.	Transactions.		Dividend.	Yield P.Ct. per Annum on the Middle Price.
	Highest.	Lowest.		
			P.Ct.	£ s. d.
1925	85	79	5	6 1 11
1926	79⅝	77	5	6 7 8
1927	77⅞	75½	5	6 10 6
1928	80½	77½	5	6 6 7

Following on the coal stoppage, the gas stock market was depressed during the years 1926 and 1927. The position has improved in the last two years, but the present quotation—75-78 *ex* div.—is still low, having regard to the class of security, and the yield is £6 10s. 8d. p.ct., which is very attractive.

AN ATTRACTIVE CARNIVAL EXHIBIT.



The accompanying photograph is of a decorated car, which the Gas Light and Coke Company are this year lending to the various Local Authorities in connection with Hospital Carnivals.

The design represents an Eastern temple in spring-time, the temple itself having the appearance of old bronze rising from its natural surroundings of green turf; the roof and supports are overgrown with purple vine, and the tiered base in places almost obscured by clumps of its native wild iris in shades of purple and lemon. At each corner recess, small pools catch and reflect the different colours, increasing the brightness of the scheme.

Advertising matter is introduced by means of daylight signs on front and sides; and another, fitted into a bronze brazier in the interior, represents the sacred temple fire, a fan working from the inside being utilized to give life and movement to the flames.

DEVELOPMENT OF GAS PROPAGANDA IN GERMANY.

We have been favoured by an esteemed correspondent with the following notes on this subject, which will be of interest particularly to those who saw and admired the great propaganda effort of the Berlin Exhibition this summer.

For the first ten years after the introduction of gas cooking, efforts to increase gas sales were carried on principally by the manufacturers of gas apparatus. The gas-works, 80 p.ct. of which were municipally owned, were content for the most part to produce a good gas at a low price in such quantities as were required by unstimulated demand. The official conception of business methods and the manner of financing the undertakings rarely permitted of the accumulation of reserves even for works replacements and extensions, for which purposes recourse had generally to be had to loans. It must be acknowledged that in the end this worked frequently to the advantage of the undertakings as regards technical development; and large numbers of private concerns were taken over on the expiration of their first concessions, and, commercially sound but technically out-of-date, they were able to be improved both in capacity and efficiency at the public expense. They were taken over municipally because they were regarded as going commercial concerns; but the conception of their functions has changed materially of recent years. In those days, they were considered desirable mainly as contributing to the amenities of the life of the community. In the financial conditions of recent times, however, it has been found necessary to make them contribute as far as possible to the communal income.

Concurrently with this later development came the change in gas practice which reduced the normal calorific value from 5000 to 4200 calories per cub.m. [560 to 470 B.Th.U. per c.ft.], while at the same time financial stringency demanded, wherever possible, an increased price per cubic metre. Spoilt as he had been in the past, when gas supply had been municipally managed for his benefit rather than for profit making, the German citizen was appalled by this double change to his disadvantage, and on all sides there was grave discontent. But the heads of the industry soon adapted themselves to the new situation. Commercial results were required of them. Consequently, they demanded the right to conduct their business upon ordinary commercial lines, and an association was formed, for propaganda purposes, in conjunction with the plant manufacturers, which was known as the "Zentrale für Gasverwertung." The difficulties of the inflation period put an end to the activities of this organization; but when conditions improved, a successor was soon formed, mainly by the efforts of the gas undertakings, with the title of "Gasverbrauch, G.m.b.H." This might be rendered in English as "Gas Consumption, Ltd.," and it is actually the equivalent in Germany of the "B.C.G.A." It is financed by a contribution of 15 pfennig per 1000 cub.m. [approx. 4s. 3d. per million c.ft.].

Technical Section.

For organization purposes, the Association is divided into three sections, one of which is devoted to technical and statistical activities. This section studies, among other things, the circumstances upon which gas supply depends; the working methods of competitors; the efficiency of competing fuels and their apparatus; and the conditions under which they could be replaced by gas. It has devoted much energy to the compilation of statistics upon which to base a fair judgment of the real merits of gas as compared with its competitors in all spheres. The organ of this section is a monthly publication of "Technical Notes for Gas Salesmen," which is kept entirely free of any commercial aspect and of advertising matter. In the four years of its existence, in which it has reached almost every country in the world, it has been the means of bringing to light and to frank discussion many an interesting experience in the daily work of the gas industry which would otherwise have remained hidden in the archives of the works, instead of becoming common property for the benefit of the whole industry. Information from daily practice is being prepared in diagram and tabular form. The latter is being compiled from an exhaustive search of the technical literature of all nations, and, when it is ready shortly, it will form a very comprehensive and reliable guide to all the problems confronting the industry to-day. Results of a continuous observation of the electrical industry are the subject of regular special publications. Experiments and investigations, covering a wide range, and upon a practical scale, are made with a view to carrying the uses of gas further and further. They provide material for the application of theory to practice, and keep the engineer in constant touch with all developments in this direction. A further branch of the section's activities is the provision of subject matter for papers at the various meetings of technical associations.

Propaganda among the Public.

The second section of the Association is that devoted to outside work. It is conducted by expert salesmen who have wide experience also of the engineering side, and their task is the working-up of all material which is deemed suitable for the popularizing of gas by either the written or the spoken word. They began with propaganda and instructional lectures, and have now developed specialized courses for training women lecturers, some of whom are employed directly, others by individual gas undertakings. Courses of cookery instruction are even given to housewives who show particular interest in the public demonstrations and lectures.

A great step forward was made by offering instruction to private gas fitters. For many years they had worked with rather a feeling of hostility to the gas-works, engendered by the restrictions put upon their work by official regulations, and in some measure by the financial superiority of the big undertakings. Courses which were started all over the country had a very salutary effect in removing this feeling. It was easy in most cases to show the independent firms that their interests lay in working hand-in-hand with the gas suppliers rather than in veiled opposition, and in persuading their customers to adopt the up-to-date appliances approved by the works. Many who had been inclined to look to electrical apparatus as their mainstay for the future, simply through ignorance of modern developments in gas consumption, were won back to gas by the efforts of the Association.

Great success has attended the efforts of the Association to obtain a foothold in educational establishments, and a start was made, as an experiment, by offering courses for the teachers of household and commercial schools, girls' schools, and higher boys' schools. By this means the attention was attracted of the educational authorities, who in recent years have shown great interest in anything tending to improve the amenities of life; and their support was asked for. To-day, they consider instruction in gas matters to be of such importance that every facility to attend courses, including special leave of absence, is given to the teachers in almost all districts.

A National Cookery Contest.

A contest which was held last year was instrumental in attracting notice throughout the land. During the last three years the country was organized into districts, over each of which, for the purposes of the Association, there presided an engineer or prominent lady who kept in close touch with the local gas undertakings. By means of this organization, a national cookery championship was arranged. At about 400 centres, 6000 competitors took part, all working under identical conditions and with similar cookers. The task set was the preparation of a day's typical meals for four to five persons, with the heating of the necessary washing-up water. In order to make the test approximate as nearly as possible to everyday conditions, a pause was enforced between each meal to allow the apparatus to cool. For the purpose of arriving at a comparative figure, the gas consumption and the minutes required for the operations were multiplied together, and in each instance a committee of prominent local people was formed to judge when the food was properly cooked. Meter readings and timing were taken by duly appointed officials, who acted under observation of the Press and the public, who attended the competitions in huge numbers. From the local contests, the winners competed further in 15 district competitions, from which the "finalists" were taken to Berlin for the national championship. Apart from valuable data obtained, the contest resulted in an enormous amount of publicity for gas. The halls were generally crowded to overflowing under police control, and newspaper reports forced themselves on the attention of those who were unable to be present. Valuable prizes were offered not only to the victors, but also to the public for forecasts as to the results.

This "outside" section of the Association derives the material for its propaganda partly from the technical section and partly from the results obtained in its own instructional and experimental kitchen, in which practical comparisons are made between various systems, and especially with the capabilities and efficiency of electrical cooking. Results are made known in a quarterly publication, which has the widest circulation of any gas periodical in Germany.

Literature and Posters.

The third section of the Association is responsible for the preparation of all propaganda material in the shape of leaflets, posters, cinematograph films, and illustrations, and for advertisements in the Daily Press. On occasion, it works in collaboration with the "outside" section in the preparation of exhibitions. It publishes an annual "Housewife's Manual," which every year commands an increasing circulation, both directly to the public and through distribution by the gas undertakings. This section is self-supporting by its sales of propaganda material. It is also largely responsible for internal

organization, and for the plans upon which the whole system of a unified propaganda effort by the entire industry is based. In contrast to the electrical apparatus industry in Germany, which is largely trustified, the makers of gas appliances are divided into innumerable firms, some large, but, for the most part, of no great size. Competition between them remains in many respects keen, but it is hoped that the Association will appeal more and more as a neutral institution around which they can rally for a united effort in the general interest.

SOME RESULTS.

Figures are always liable to be misleading, and it is difficult to measure the success of the propaganda in this way. But it is worth mentioning that, in the five years of the Association's work, the gas consumption in Germany has doubled itself. Some 30,000 people have been through the courses of instruction provided, and about 6 million housewives have attended lectures and demonstrations. But more important than all these would appear the psychological effect upon the industry itself. In the face of the economically powerful electrical industry, with its cleverly conducted propaganda, and of the well-organized opposition of the sellers of solid fuels, the gas industry has not only gone from strength to strength and recovered ground that had been lost, but has achieved a unity and an energy which are unexcelled in any industry in the world.

SECOND INTERNATIONAL CONFERENCE ON BITUMINOUS COAL; PITTSBURGH, NOVEMBER, 1928.—VOL. 2.

By "TAMBT."

The contents of Vol. 2 are much more miscellaneous. Coal cleaning and general problems of combustion and purification form the bulk of the subject-matter. First, however, we turn to a whimsical essay by Mr. F. C. Greene, of Chicago, entitled "Low-Temperature Phantom," in which he describes an apparatus which looks like a return to the ancient method of making charcoal by the partial combustion of a wood-pile. Essentially, we should say the results, as regards the production of semi-coke, would be similar to those achieved by the Maclaurin process on this side. We may hear more about it when Mr. Greene has got to full-scale working and a more serious mood.

The following paragraph from Dr. C. W. Brabbée's paper throws a curious light on the comparison between the fuel problem in the United States and that in our own country. "European engineers have used coke for a long time as domestic fuel to their entire satisfaction, and it was really surprising to learn that in the United States coke is used but comparatively little for that purpose. One of the main reasons for this is to be found in the fact that coke needs a very much fuller magazine—almost twice as much as that for anthracite—if, with the same boiler load, the same length of firing period is to be obtained." Dr. Margaret Fishenden and her staff of the Fuel Research Board have, of course, shown that the coke-fired boiler and a hot-water circulating system is incomparably the cheapest form of domestic heating, but it is remarkable that many of the stoves and boilers used in this country and on the Continent are of American origin, and most of them open to the criticism that the "fuel magazine" is much too small for effective and convenient manipulation. Dr. Brabbée describes the "Magazine" boiler, and demonstrates its efficiency in several tests.

Prof. A. G. Christie contributes a paper giving a concise, masterly survey of the whole field of boiler firing with bituminous coal—a paper closely reasoned and packed full of relevant detail, including a study of the waste gases, the formation of sulphur trioxide (SO_3), slagging on furnace walls and boiler tubes, water-cooling of walls, and automatic combustion control. It is evident that the last few points in the high efficiencies now being obtained in power generating plants are the result of unceasing strenuous efforts on the part of designers and operators, and that the limits of progress in this direction are being rapidly approached. In the exciting contest between the mechanical stoker and pulverized fuel firing, the victory is still very much in the balance. The problem of the fine ash carried away with the chimney gases and deposited in the immediate neighbourhood is evidently not unknown in Chicago, and engineers are exhorted to find a solution for it. Many attempts have been made, perhaps the most successful being the water spray, which, it is claimed, removed 90 p.ct. of the nuisance. Possibly the same device would effectually trap the no less deleterious, though more elusive, sulphur fumes. "The end of improvement in equipment for burning bituminous coal is not yet in sight, and one may look forward to the development in the near future of still better, simpler, and cheaper furnaces."

"The kilowatt-hour has now become one of the major products of the United States . . . it promises to exceed in value the yearly production of many other products which have heretofore been used as indices of business conditions." To the fuel engineer, Dr. A. R. Smith's speculations are as interesting as those of Mr. H. G. Wells to the general reader. He thinks that by 1935 the over-all efficiency of the great power stations may be brought up to 34 p.ct. simply by development on the present lines. For any further increase new combustion cycles must be introduced. The combination of mercury vapour with steam is suggested, but most stress is laid on the use of a "dustless, ashless gas," for which the boiler design will be altered materially. He develops this idea, which we are sure is a sound one, to the point of sketching an elevation of the gas-electric power station of the future.

Mr. W. L. Robinson, on "Locomotive Fuel," is concerned chiefly with the management of an organization of supplies of solid fuel to locomotives of the standard type, and when it is noted that one-quarter of the total consumption of bituminous coal is used in the locomotive firebox, and that 90 p.ct. of the fuel consumed in this way is bituminous coal, the importance of the subject is obvious. Fuel cost forms a very large item in transport expenses, standing second only to wages cost; and yet the average distribution of heat and heat losses in a locomotive "of conventional design, representative of the greater proportion of the locomotives now in service, assuming that the locomotive is in perfect mechanical condition and skilfully fired and operated," is such that only 6 p.ct. of the heat supplied to the machine is applied as work at the drawbar. Mr. Robinson's hopes for the future do not as yet, apparently, include electrification (though in the discussion it was clear that those electrical schemes which have been undertaken are successful, in spite of the high capital cost involved). They rather cover improvements in organization, removal of ash before supply, possibly water-tube boilers, and the use of oil and of pulverized coal.

Mr. A. T. Stuart's paper, "Some Potential Relations between Electricity and Coal Utilization," coupled with Dr. Noeggerath's description of his cell for pressure electrolysis, is an essay in what may be called fuel philosophy. Starting from the position that gas is the ideal form for fuel, we are to use hydraulic power to generate electricity, which will be used to generate hydrogen and oxygen by electrolysis—*i.e.*, we should be "making fuel out of water with water." Coal will be hauled to the hydraulic power plant to be gasified by the oxy-steam reaction. Hydrogen will be used for the production of liquid fuels in the form generally of alcohols. "It is possible that, in the future, it may be considered most undesirable to use raw electricity just as it is now considered undesirable to burn raw coal." And the problem is to be solved by the application of electricity with coal in the production of gases and liquid fuels of low cost.

Mr. D. W. Wilson ("Dry Quenching of Coke") opens with the statement that all systems of high-temperature carbonization, except the continuous vertical retort, involve the discharge of coke at high temperatures with considerable loss of heat. The amount of heat which can be recovered in dry quenching apparatus of the steam generating type is comparatively small when compared with (say) the weight of steam generated in suitable boilers from the waste heat of retort settings and coke ovens. So that dry quenching may be taken as a necessary evil of the intermittent processes. With the advantages claimed for dry quenched coke, everyone will be in agreement. The difficulty with dust in the dry domestic coke is one that will no doubt have to be dealt with by special treatment. We believe that already dust extraction plant forms part of coke preparation plant in the best equipped gas-works. A relevant subject is the cleaning of coal and its influence on the properties and quality of the resultant coke as well as on carbonizing processes. This subject is dealt with *in extenso* in a series of ten papers headed by that of Dr. Lessing on "The Rational Cleaning of Coal." From the latter paper the following quotation is well worth reproducing: "In order to give the directing mind of the modern fuel technologist full scope, he must have supplied to him a coal containing a minimum of extraneous matter, so that the working results are not left to the uncontrollable effects of these chance impurities, but are subject to tolerably exact prediction."

There is not too much boldness or prophecy in the prediction by Dr. Lessing that "within very few years the carbonizing industries, which are mainly concerned in the efficient

recovery of the intrinsic value of coal, will feel constrained to insist for their raw material on coal containing only a fraction of the proportion of mineral matter which is customary to-day."

The other papers cover the field of coal washing theoretically and from the point of general as well as particular processes applied industrially. The paper by Mr. F. W. Sperr confines itself particularly to sulphur as impurity, and forms a valuable and comprehensive treatise on the distribution of the sulphur from coal in the products of carbonization. An interesting table reproduced in this paper from a contribution by Mr. Dawson, of the Halifax (N.S.) Gas-Works, shows that the type of carbonizing plant used has a considerable influence on the sulphur content of the resulting gas, "the gas from Glover-West continuous vertical retorts containing a markedly lower percentage of sulphur, and, therefore, requiring considerably less purification than gas from horizontal retorts or inclined slot retorts."

Dr. M. Dolch contributes an interesting paper on "Fuel Tests and Plant Operation," which, however, gives rather too much of somewhat revolutionary fuel testing, and too little of its co-ordination with plant operation.

Five papers deal with the important subject of fertilizers, and discuss all aspects of the production of nitrogenous compounds, including bye-product recovery and the synthesis of ammonia, &c., by the fixation of atmospheric nitrogen.

Dr. Karl Bunte discusses the influence of ash constituents and of the melting-point of fuel ashes on furnace and general gasification technology. He also describes a novel method for the determination and graphical representation of the softening and fusibility range of coal ash.

The paper by Dr. D. S. Jacobus and Mr. E. G. Bailey on "Removal of Ash and Loss of Carbon from Boiler Furnaces" is an interesting study of the development of ash removal from mechanical stokers, pulverized fuel fired furnaces, and molten slag producing furnaces. Useful information is also furnished with regard to the control and reduction of loss by unconsumed carbon in the ash and flue dust from the different types of boiler investigated. A number of interesting relationships between ash constituents and fusibility are also given in a paper by Prof. Thomas G. Estep, in which over 2000 coals, ranging from anthracite to lignite, are dealt with from all parts of the United States.

It is interesting to note in connection with this latter series of papers that the general tendency appears to be towards the development of slagging processes for ash removal, so that lower temperature fusible ashes would be preferable in contrast to the desirability of high melting-point or infusible ashes which has been almost universally stressed in most of the industrial furnace processes in recent years.

Dr. E. W. Smith gave one of his typically lucid and detailed tabulations of the comparative costs of gas production in the retort house, referring to continuous vertical retorts, intermittent vertical chambers, and horizontal retorts as the carbonizing systems for comparison. It is hardly to be expected that the gas engineer will put as much faith as the layman would in Dr. Smith's conclusions that the small difference in the ultimate cost per therm of gas produced in the three systems and the small difference in capital cost of a new installation are negligible factors in comparison with economies which can be effected through improved methods of distribution and sale of gas and coke. His figures show clearly that the cheapest gas is made in continuous vertical retorts, owing to higher yields of gaseous therms per ton of coal, higher yields of tar, and lower fuel consumption.

It is rather surprising that in so comprehensive a collection of papers dealing with fuel problems only one paper appears dealing directly with the improvement of ammonia liquor (by extraction of phenols) from the point of view of the subsequent disposal of the waste liquor. There is also a noted absence of reference to methods of disposal of the weak, valueless, aqueous liquors obtained in low-temperature carbonization processes, and particularly of the obnoxious liquor produced in the distillation of lignites and brown coals. A point for criticism in connection with the proceedings is that, as this conference on bituminous coal had such an overwhelming syllabus to contend with, it appears rather a pity that a fair number of irrelevant papers should have been included, such as "Synthesis of Methyl Alcohol," "Formation of Benzole from Methane," &c.—subjects which could very well have been left for another occasion.

On the whole, the conference has proved a marked success; and, in producing the two volumes of the proceedings under review, has furnished fuel technologists with an invaluable encyclopædia of information on coal and its utilization.

APPLICATION OF TOWN GAS TO INDUSTRIAL HEATING.

By C. M WALTER, D.Sc., A.M.I.E.E., M.Inst.Met., Engineer in Charge of City of Birmingham Industrial Research Laboratories.

[A Lecture given at the North-East Coast Exhibition, July 11, 1929.]

When dealing with the application of town gas to industrial heating operations, one is at once surprised at the phenomenal developments which have taken place during the last few years. These developments in the use of town gas have come about, in the first place, owing to the considerable improvements which have taken place in gas furnace apparatus, and secondly, owing to the fact that the savings effected by the use of this form of fuel, as compared with other classes of fuel, are so great as considerably to outweigh the increase of fuel cost in many industrial operations.

I particularly wish to emphasize this point, as for several years in many industrial operations, fuel cost was considered to be the only desiderata, whereas to-day, manufacturing concerns appreciate the fact that, though fuel cost may in some instances be a prime cost, the total costs of heating operations must be taken into account when comparing one type of fuel with another, and in this way, the considerable advantages to be obtained by the use of town gas have at once become apparent.

The result is that at the present time, town gas is being used as a fuel for certain processes, even at much higher cost than other forms of fuel, the incidental savings effected by its use easily outweighing the extra cost of the fuel itself.

THE POSITION IN BIRMINGHAM.

In Birmingham, the increase in the use of gas is apparent from the published returns of gas sold by the City of Birmingham Gas Department, in which a dissection of the amount of gas used for industrial heating purposes, apart from power, is set out, and it is interesting to note that for the year ended March 31, 1928, the increase in the quantity of gas sold for this purpose amounted to no less than 238 million c.ft., the total output for the year for industrial purposes establishing a record, and representing 20·95 p.ct. of the total output of gas from the Department.

The development which has taken place in Birmingham is also reflected in other industrial centres, and it is interesting to note that in London, Sheffield, and other cities, the output of gas for industrial heating purposes is increasing from year to year.

While in Birmingham we are not fortunate enough to be able to build ships, as in Newcastle, nevertheless, it is surprising to note the number of industrial concerns in the Midlands who are engaged in the manufacture of many and varied parts, fittings, &c., which are used in the shipbuilding trades, in the preparation and production of which, gas apparatus and furnace plant, somewhat similar to that used in the dockyards for the heating of plates and steel sections, are in use.

As your Chairman has made reference to the fact that in Newcastle district, you are fortunate enough to have at one of the ship-yards what is considered to be the largest gas furnace yet in existence, I propose to say a few words in regard to this plant, which, as most of you will have heard, is the large plate and bar heating furnace installed at Smith's Dockyard by Priest Furnaces, Ltd., of Middlesbrough.

I am also led to understand that other furnace makers have installed in this district, plate and bar heating furnaces for ship repair work, which are fired by town gas, and it is interesting to note that, owing to the considerable savings in labour and floor space and to the great convenience and cleanliness obtained by the use of gas for this purpose, the total cost of running is, in many instances, less than that of solid fuel, despite the considerable increase in fuel cost.

With regard to the large furnace installed at Messrs. Smith's Dock Company, Ltd., North Shields Dockyard, this has inside dimensions of 31 ft. long by 10 ft. wide and 4 ft. high at the plate end, with a bar extension 27 ft. long by 4 ft. wide by 3 ft. 3 in. high, the overall length for working long bars being 58 ft. This furnace is also fitted with an intermediate furnace door, so that the plate end alone may be worked.

From published information, it would appear that this furnace is of the regenerator type, town gas being supplied from the gas reversing valves, through the gas mains extending along both sides of the furnace, these mains being fitted with adjustable gas jets spaced about 12 in., and entering the gas ports near the outlets into the furnace.

It is also interesting to note that only one operation is necessary to reverse the direction of the chimney gas and air supplies. The air for combustion is supplied at a pressure of

about 6-in. W.G., and the maximum gas consumption during the heating-up period is about 15,000 c.ft. per hour.

Another interesting point in the operation of this furnace is that, during a test which was carried out with a furnace temperature of 1100° C., the highest temperature recorded in exit gases at chimney base was the remarkably low one of 68° C. The time required to reach a temperature of 1100° C. was approximately four hours.

The advantages to be obtained by the use of town gas in a furnace of this kind will be at once apparent, especially when it is remembered that such a plant may be called upon for repair work at short notice, and owing to the ease of starting up and shutting down; the clean atmosphere within the furnace and the fact that there is no handling of fuel or ashes make it a very suitable unit for intermittent work.

Boiler Plate Heating.

Another very interesting application of town gas to shipbuilding work is its use for the heating of front and back end boiler plates for flanging, the sizes ranging up to 16 ft. in diameter and 1¼ in. thick. By the employment of town gas for this purpose, it is found that better control of temperature is obtained, there is less pitting and risk of burning, and further, the speed of heating is considerably increased.

Rivet Heating.

The use of gas for the heating of rivets is another interesting feature in the shipbuilding yards, the results of tests show that, by means of town gas rivet heating furnaces, where temperatures up to 1050° C. are required, a quicker and more uniform heat can be obtained, with a minimum of scale and rivet wastage. Further, the advantage of single valve control will be at once apparent.

Practical tests also show that by heating with this type of furnace, the rivets drive better, and in some instances, an increased speed of 300/500 more rivets per day per furnace has been obtained, with a considerably reduced wastage. Results of tests carried out in a well-known forge also show that by the use of town gas as a fuel, the cost of heating 800 rivets at the rate of 100 per hour was reduced from 6s. 3d. to 2s. 9½d., the floor space occupied by the furnace only being one-fifth of that taken by a solid fuel furnace carrying out the same operation. There was also considerable advantage to be obtained owing to the fact that no extra space was required for the storage of fuel.

Pipe Bending and Brazing.

Another interesting application is that of town gas for the bending of pipes and brazing of flanges on pipes. Simple furnaces can be constructed by means of suitably arranged air blast burners for this class of work, some examples of which have already been demonstrated at the North-East Coast Exhibition.

A further important use of town gas is in connection with the shrinking of crank webs, by means of suitable burners, arranged so as to play on the inside of the web to be heated, which, after being raised to the required temperature, is shrunk on to the crank pin. Several installations of burners of this kind have already been installed in ship-yards. In a similar manner, the heating of gunmetal liners for shrinking on to propeller shafts can be effectively carried out.

Carburizing and Re-heating.

With regard to the use of gas for the heat-treatment of metals, including carburizing and re-heating, a considerable amount of work has been recently carried out, with the result that furnaces of greatly improved types have been placed on the market, which have the advantage of extreme simplicity of control and also high thermal efficiency. In this respect, it is interesting to note that only recently, during a series of tests carried out in a large motor component factory in Birmingham, in connection with the carburizing of steel parts for motor cars, efficiencies approximating to 65 p.ct. were readily obtained, corresponding to a consumption of slightly under 2 c.ft. of gas of 475 B.Th.U. per c.ft. net per lb. of load carburized. The furnace in which these tests were carried out was of the latest type, and the very high efficiency obtained is largely due to the efficient design, both in regard to the thermal capacity of the heating chamber, and also the very efficient lagging of the chamber itself. This furnace is of the recuperator type, fired by town gas at ordinary low pressure with air at atmospheric pressure.

Not many years ago, a similar operation with the plant then obtainable would require as much as 6 c.ft. per lb. working under similar conditions.

Other applications of town gas include the following:

Water and Solution Heating.

Town gas has been adopted very widely for the heating of water and solutions in open tanks, owing to the simplicity of heating and the efficient lagging which can be used as against the inefficient method of heating by solid fuel.

Tanks of this kind can be brought to any desired temperature very rapidly, and easily maintained on a low gas consumption. Water heating to boiling point in an efficiently lagged tank with good gas burners, can be carried out with an efficiency of over 50 p.ct.

Steam Raising.

The application of town gas to this solid fuel stronghold has made rapid strides of recent years, owing to the introduction of gas-heated boilers capable of raising steam on a high thermal efficiency basis, such as the Spencer-Bonecourt boiler, in which a thermal efficiency approximating to 85 p.ct. can be obtained.

The arguments of cleanliness, ash abolition, &c., usually applied to gas heating are incontrovertible, and the adaptability of the gas-heated boiler in comparison with the solid fuel boiler cannot be disputed. One familiar instance brought to my mind is of a boiler feeding large presses, which is placed in a small cellar in the shop floor, and which shows a very big saving in total costs over a solid fuel boiler doing exactly similar work at another depôt of the same company.

Varnish Manufacture.

A large number of works, both in London and the provinces, have "all-gas" plants in operation for the boiling of gums and oil for the production of varnishes, enamels, &c.

The absolute controllability and reduction of fire risks have had a great bearing on the change over from solid fuel, and there is no doubt that the thermal efficiency of the operation has been very considerably increased as compared with solid fuel. A large fuel bed was required for both gum and oil boiling and a very heavy pull on the stack to enable the necessary temperatures to be reached, this undoubtedly leading to a very high flue temperature and small heat value being obtained from the fuel used.

By the use of town gas, combustion spaces have been reduced to a minimum, and direct contact with the heat source has been obtained. The general opinion of varnish makers who have adopted gas for heating their varnish kettles and oil boilers is that a return to the use of solid fuel cannot for one moment be contemplated.

Melting.

Town gas has been widely used for, and possesses many peculiar advantages for, the melting of all metals and alloys, from the low temperature melting-point white metals, such as tin, solder, bearing metals, to the higher melting-point metals, such as aluminium, brass, copper, gun-metal, gold, silver, &c., and owing to the ease with which exceptionally high temperatures are obtained, gas is adopted in many instances for the melting of nickel and nickel alloys.

Taking aluminium as an example of the application of gas to the melting field, this metal or its alloys are extensively used in the manufacture of both domestic and industrial articles, and in almost every case where a supply is available, gas is used as a fuel for melting and can easily compete with other forms of fuel, owing to the highly efficient manner in which it can be applied.

Where this metal is melted in open type furnaces, as distinct from furnaces requiring iron pots or plumbago crucibles, a figure as low as 3 c.ft. of 500 B.Th.U. gas per lb. of metal melted can be obtained, representing an efficiency of approximately 35 p.ct.

Drying Operations.

Under this heading, I am including furnaces or stoves used for the drying of cores for foundry work, the japan and lacquer drying operations to be met with in the cycle, motor, and cabinet brassfoundry trades, and the stoves used for metal colouring.

It would be very difficult indeed to arrive at anything like an accurate estimate of the total gas consumption used all over the country in stoves carrying out the operations mentioned above, the ease with which all ranges of temperatures are obtained and maintained with a minimum amount of human control, making town gas practically the only form of fuel to be considered when work of this kind is under consideration.

Recently, the up-to-date conveyor methods employing through type-drying stoves have been widely adopted, and gas has been used in every instance throughout the country, which has been brought to my notice.

In the ordinary "in and out" stove, given correct burners and fixing of air supplies and flues, gas-heating cannot be anything but a highly efficient method of heating, and with the conveyor methods, this efficiency would undoubtedly be further increased.

General Heat-Treatment of Metals Operations.

(*a*) *Annealing.*—The gas furnace, either of the direct-fired or partly recuperative type, has practically made the solid fuel furnace non-existent for the annealing of stampings, pressings, and spinnings in either brass or steel, where short period or intermittent working is required.

The low cost of initial installation, cleanliness, ease, and accuracy of temperature control and saving in space and im-

proved quality of work have led to the use of the gas furnace in our manufacturing concerns to an extent which is rarely realized, and tests have shown, using even a direct-fired furnace without any form of recuperation, a figure as low as 1·8 c.ft. of 500 B.Th.U. gas per lb. of metal heated to a temperature of 650° C. in the case of brass pressing, representing an efficiency of 12½ p.ct. When large quantities of metal have to be dealt with, furnaces of the recuperative type are used.

During a recent test on brass strip annealing in a furnace of an improved recuperator type, in which 3¼ tons of metal were heated, an efficiency of 24 p.ct. was realized.

(*b*) *Carburizing and Re-heating.*—The bulk of the carburizing and re-heating operations carried out in the motor and allied engineering trades are performed in gas-heated furnaces; the modern demand for a highly scientific product has forced the use of solid fuel and its uncertainty, uncleanliness, and lack of control into obscurity. Large batteries of furnaces heated by gas are to be found in all works manufacturing motor gear parts and engineering machinery for the carrying out of carburizing and re-heating and tool hardening operations called for in the modern hardening shops. The gas furnace in this instance lends itself wonderfully to the high degree of accurate temperature control now demanded in any modern engineering works.

In one works in the Midlands, over 1000 tons of motor gear parts per annum are heat-treated in gas-heated furnaces. The yearly consumption of gas of this one firm amounts to over 33 million c.ft.

(*c*) *High-Speed Steel Hardening.*—This process requires a very high temperature, usually in a small space, and gas is almost universally used for this particular operation.

(*d*) *Forging.*—A very considerable quantity of gas is sold for the production of forgings, such as the common nut and bolt. The operation is performed by gas, in a highly efficient manner, owing to the high production which is obtained.

During a special forging test conducted on a practical scale, an efficiency of 32 p.ct. was obtained for this operation with a gas and air furnace of the direct-fired type. The gas furnace can be designed to keep pace with almost any reasonable rate of heating demanded by this operation.

Food Production.

Apart from the high thermal efficiency obtained by the use of gas as a fuel in any works producing articles of an edible nature, the questions of absence of smoke and dust, general cleanliness of plant and surroundings, and temperature control must be given special consideration in the choice of a fuel for heat operations for the production of bread and confectionery, sweets and chocolates, frying of potatoes in large quantities, cooking of fish and chips, &c.

Producers of these classes of goods are fully alive to the advantages which gas offers as a fuel for these operations of bread baking, sugar boiling, heating of oil for fish and potato frying, which are necessary in the production of the foodstuffs mentioned above.

Enamelling.

The new designs of recuperative types of gas-fired furnaces of the muffle type have been quickly adopted by the enamelling trade, replacing in every instance furnaces using solid fuel, and there is no doubt but that this trade will use gas much more extensively in the future.

In a number of instances recently, gas furnaces have been installed for the firing of porcelain and ceramic ware. For example, electrical insulators demand a temperature of 1450° C. for firing and glazing, and this temperature over a large area is easily obtained with gas as a fuel.

THE PRIVATE RAILWAY WAGON.

Its Origin and Functions: Dangers of Sudden Abolition.

By Philip Gee.

[From "The Chamber of Commerce Journal."]

The existing system whereby fully one-half of the railway wagons in the country are privately owned, and to a great extent operated and controlled by the owners, is a subject that from time to time exercises the minds of would-be traffic reformers and becomes a matter of public controversy.

During the recent electoral campaign an attempt was made to thrust this question upon the attention of the public as a great election issue, and after its failure the subject lapsed once more into obscurity. It was, however, revived by Mr. J. H. Thomas, the Lord Privy Seal, who stated, during a speech in which he dealt with unemployment and railway reform, that one of the problems that must be faced very effectively, immediately the report of the Standing Joint Committee on Mineral Transport was received, was the problem of private wagons. Mr. Thomas added that for every four wagons on the railways three were privately owned and could not be used, and that coalowners, railway companies, traders, and merchants all complained. This speech suggests that the new Government is determined to "do something" about the private wagon.

The suggestions implied by Mr. Thomas' statements are not borne out by the facts. About one-half of the railway wagons in the country are owned and fully operated by the railway companies themselves, and it is only the coal wagons of which it is true to say that three out of four are "privately owned." And they "cannot be used" for general goods traffic because they are urgently needed, as soon as discharged, at the collieries in order to receive the coal as it is brought to the pithead. If coal wagons were diverted to any other purpose the pits must stop working until the wagons are there, and such stoppages result in unemployment and erratic working of the mines with consequent increased cost. Moreover, coal wagons are not needed for the conveyance of general merchandise. The railway companies have adequate supplies of wagons suitably constructed for such traffic.

Nor is the statement that coal owners, railway companies, traders, and merchants all complain of the privately owned wagon in accordance with the findings of the Royal Commission on the Coal Industry, which reported quite definitely in a contrary sense. The Report states (page 102) that "all the parties directly affected are definitely opposed to the wagons being brought into the ownership of the railway companies. The railway companies themselves, the mine owners, and the traders all gave evidence in opposition to such a measure," and a "national pool formed by the present owners is also regarded by them as impracticable." The Commissioners also reported that they would not "recommend these proposals for adoption."

When the Railways Refused to Provide Wagons.

The existing system originated with the railway system itself, and its development is the result of practical experiment in filling a recognized need. The early legislation under which the railways worked authorized such a small charge for the provision of wagons for the low-grade mineral traffic that the railway companies did not choose to provide the wagons themselves; and it became the practice to inform colliery owners and coal traders that if they required coal to be transported they must themselves provide wagons for the purpose. It is thus over sixty years ago that companies first began to be formed to finance the purchase and supply of wagons to colliery companies and others, and at the present time there are 520,000 privately owned wagons in the coal trade alone, with a capital value of over £44,000,000.

For and Against a "Common User."

A brief examination of the arguments for and against either the acquisition of the privately-owned wagons by the State, or a complete and compulsory common user, may assist in the formation of a considered judgment on this question. The advocates of the "common user" claim that substantial savings to the railways could be effected in the cost of shunting empty wagons if the obligation to return them to the original loading point were eliminated. Empty trucks, they say, need not then be hauled about the country and engine power would be economized. The introduction of such a system, it is argued, would pave the way for a general adoption of a standard wagon of larger capacity—(say) 20 tons—and this would increase the paying capacity of the trains, since less deadweight in proportion to paying weight would be hauled for the same expenditure of engine power.

Now the argument that very great savings will result from a common user of railway wagons is largely based upon two profound fallacies: (1) That there is a return load available for every wagon at the end of its outward journey; and (2) that the wagon which carries coal to the ports can be utilized to bring vegetables or dairy produce, or perishable articles generally, from the ports to the cities.

These assumptions are both incorrect. Return freights are not, in fact, awaiting transportation to the mining districts from those ports and depôts at which coal is unloaded. And if they were, many of the wagons—as, for instance, those with hopper bottoms used in the export trade—would be quite unsuitable for agricultural produce and general merchandise. In any event they would have to be cleaned out before they could be used, a process entailing both time and expense. The

common user was, in fact, tried out during the war—and failed.

> "With regard to the suggestion which has been made that if wagons were pooled they would then be available for return loads, this in practice has been proved to be a fallacy. During the war an attempt was made to use privately owned wagons in this manner under a common users' scheme, but *it was found that instead of the wagons being loaded back in the direction from which they came, they were scattered to all parts of the country, and the loads which they carried were insignificant when compared with the enormous amount of time the wagons were out of traffic, and in many cases actually lost,* and the earnings of the wagons were negligible. Further, the wagons which did arrive at loading points were usually found to be of the wrong type and entirely unserviceable." (Royal Commission on the Coal Industry: Evidence, p. 884, par. 40.)

THE QUESTION OF STORAGE.

It will probably be admitted that any system must be judged finally upon its ability to provide an adequate supply of wagons *in all circumstances*. A saving in shunting would be dearly bought at the expense of delay or interruption in the producing industries.

Colliery owners, for instance, have made a practice of providing themselves with sufficient wagons to carry the largest output of coal that can be raised in a certain number of days, the actual number being decided in each case according to the size, trade, and circumstances of each particular colliery. If orders are temporarily diminished the colliery does not cease to wind coal, but continues to fill wagons for stock. It is most uneconomical, and at many collieries impossible, to store coal on the ground. The coal deteriorates, and the cost of putting it down on the ground and picking it up equals that of about 48 days' storage in a wagon.

But if the wagons were railway-owned they would not be available for the purposes of storage of coal at the collieries during periods of slack trade. This important fact was definitely stated by Sir Ralph Wedgwood as follows: "Railway-owned wagons could not be used in this way; if they were so used the demand would be almost unlimited, inasmuch as the collieries would be in the position of calling the tune while the railway companies would bear the cost. . . . It would, therefore, be necessary to recognize that railway-owned wagons are provided for carriage only and not for storage." (Royal Commission on the Coal Industry: Evidence, p. 810, par. 50.)

And from the evidence both of Sir Ralph Wedgwood and of the representatives of the coal industry, it appeared that in the north-eastern section of the London and North Eastern Railway, where 88 p.ct. of the wagons are already railway owned, not only does the railway company have to borrow wagons from the private owners or wagon hiring companies in time of booming trade, but that there is a tendency for the collieries to come to a stop earlier than in other districts owing to a shortage of wagons for storage when trade is slack.

AMOUNT OF THE POSSIBLE SAVING.

It will be evident, therefore, that it is not a practical proposition to delay the return of wagons to a colliery in order to effect problematical savings in shunting. And these savings upon examination are shown to be very problematical. The case for them is based, in the main, upon evidence given by Sir Ralph Wedgwood, on behalf of the railway companies, before the Coal Commission. He had endeavoured to make an estimate of the saving which might be expected to result from the substitution of railway-owned for privately-owned wagons, and worked it out at from £600,000 to £1,000,000 per annum, the latter figure being a little more than 1d. per ton upon the total of rail-borne coal and coke carried. This estimate was not, however, adhered to by the witness, who subsequently admitted that it "was on the high side" (Q. 14520); "a mere attempt to get some figure" (Q. 14518); and "the best shot he could make in the dim light he had got" (Q. 14521). He added that it could not be realized unless the privately-owned wagon were abolished, and agreed that there was more shunting in the goods traffic than in the mineral (Q.14168), and that the privately-owned wagon if it is in the shipment trade does not cost very much in shunting.

The witnesses for the colliery owners declared, and quoted statistics to substantiate their claim, that the maximum possible saving would be nearer one farthing than a penny per ton.

When asked whether he regarded the estimated saving as having a sufficient element of probability about it to justify the railway companies making a corresponding reduction in their charges, Sir Ralph Wedgwood replied: "If you mean will we reduce our rates, the answer is in the negative." It is quite apparent from this evidence, therefore, that any saving in shunting costs, even if it could be effected by depriving the coal trade of the use of its wagons and putting them under railway control or into "common user," would be retained by the railways and not used to benefit the coal industry by way of a reduction in the rates.

ACQUISITION BY THE STATE.

The suggestion that the State might carry out the purchase of the private wagons arises from the following, expressed by the same authority: "As a question of railway finance . . . it will be necessary for the railway companies to find the capital for the purchase of the wagons *and this they are not in a position to do.* Apart from the question of capital, the question of charges is likely to present great difficulties, and will be a cause of disturbance if not of dispute." (Royal Commission on the Coal Industry: Evidence, p. 810, par. 55 (2).)

The capital involved in the provision of private wagons is primarily arranged for by forty to fifty firms concerned in the building, repairing, hiring out, and financing thereof, and many millions of pounds are invested in this business. It is estimated, for instance, that the capital value of all the privately-owned wagons, goods and minerals, is of the order of £60,000,000. It will be seen, therefore, that the proposed transfer by compulsory purchase is by no means the simple operation that some uninstructed advocates pretend. The ramifications are far-reaching, and the damage done by dislocating the present system would also be far-reaching—quite apart from the question of the use of public money for such a purpose.

If the Government decides to acquire the private wagons, it will probably do so under the powers already possessed by the Ministry of Transport. As Mr. Ramsay MacDonald remarked, a Government can do a lot without asking Parliament. It would then hand them over to the railway companies, which would be equivalent to placing at the disposal of the companies a large amount of profit earning capital. If, however, losses were sustained in operating the wagons the railway companies would certainly expect those losses to be made good by the State—and, indeed, the Ministry of Transport Act provides for this.

There would, moreover, be a most undesirable division of responsibility. The railway companies would immediately seek to reduce the number of wagons on the lines—since the desirability of such a reduction is the basis of the whole case for a common user and the abolition of the privately-owned wagon. But the industries of the country would be equally certain to complain that the smaller number of wagons available was insufficient for the "requirement and reasonable usage of trade" as legally required under the Ministry of Transport Act. And the sequel would be that complaints would be sent back and forth between the railway companies and the appropriate government department with the war-dishonoured minute "passed to you for necessary action, please."

THE QUESTION OF LARGER WAGONS.

A word may be said in conclusion on the question of larger wagons. Private ownership has nothing to do with the sizes of wagons and the non-introduction in larger quantities of 20-ton wagons. The private trader has no objection in principle to a 20-ton wagon, when it can be suitably and economically employed. But this is not everywhere. At the present, its use, and therefore its usefulness, is much restricted, owing to the inability of many existing appliances, both at loading and unloading points, to accommodate its width, height, and wheel base.

A NEW HOUSE ORGAN.

The latest addition to the literature of engineering comes from Alloy Welding Processes, Ltd., Ferry Lane Works, Forest Road, E. 17, manufacturers of electric arc welding plant, "A.W.P." electrodes, oxy-acetylene welding rods. This new journal, entitled "The Welder," was published for the first time on Sept. 1, and contains a good deal of matter of interest to our readers.

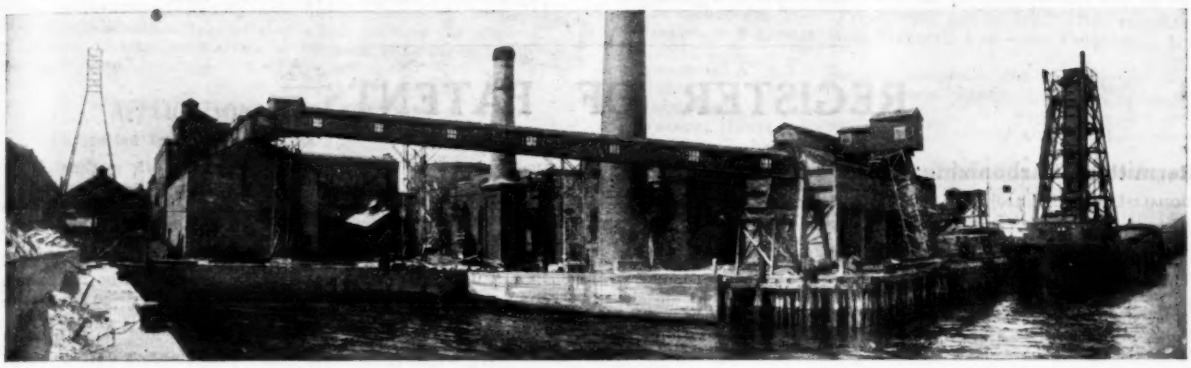
The chief object in publishing "The Welder" is to propagate a knowledge of welding among those who are likely to be interested in a process which substantially reduces the cost of production on almost every industry. The publishers of "The Welder" intend to keep their readers conversant with up-to-date welding practice. The first issue includes an open letter from the Chairman of the Company, Major James Caldwell, M.Inst.C.E., and a commentary dealing with the progress which has been made in America in connection with the use of electric arc welding for steel constructional work on buildings. The Editor of "The Welding Journal" also describes a visit to the new offices and works of Alloy Welding Processes, Ltd., at Walthamstow, which now occupy about 2½ acres. There is an article dealing with electric arc welding in the locomotive shop and one on arc welding in bridge construction, illustrated by photographs of work carried out at Lowicz, near Lodz, Poland. Other contents include a review of the "A.W.P." electric arc welding operators' handbook, and a comprehensive list of publications on welding.

The publishers believe that "The Welder" will supply a long-felt want. They have already had to print double the number that were first thought sufficient. A letter to the Editor, "The Welder," Ferry Lane Works, Forest Road, E. 17, will secure a copy, but it is advisable to apply at once for the first issue.

GLOVER-WEST VERTICALS AT HALIFAX, NOVA SCOTIA.

[From "West's Gas."]

Halifax is recognized as one of the great ocean terminals of the world, and during the winter months, when the St. Lawrence is frozen over, it becomes the main port for Canadian shipping, both import and export. The present population is in the neighbourhood of 65,000. Gas is supplied to the city by the Nova Scotia Light and Power Company, who have also controlling interests in both the electricity and tramways undertakings. The present output of the Gas Department is 120 million c.ft. per annum of 490 B.Th.U. gas.



Resulting from a series of tests carried out on Nova Scotian coals in the firm's research plant at Miles Platting, a contract for an installation of eight 40-in. by 10-in. Glover-West vertical retorts was placed in October, 1927. The whole of the gas supplied to the city of Halifax has been manufactured in this installation since January, 1929, using the local coal obtained from the Cape Breton district. Coal is shipped from Sydney to Halifax, a distance of 276 miles, and is received at the wharf running alongside the gas-works. The wharf is a continuation of the ocean terminal and is ideally situated for receiving coal for both the gas and electric manufacturing plants.

The coal-handling plant from the wharf to the coal store consists of a series of elevators and band conveyors capable of dealing with 100 tons per hour. The coal store is arranged in a series of conical hoppers so that, without additional labour, by opening a door at the bottom of each hopper, coal is delivered to a band conveyor feeding direct to a breaker of the double-claw type. From the breaker a further series of conveyors delivers the broken coal to the overhead bunkers of the vertical plant.

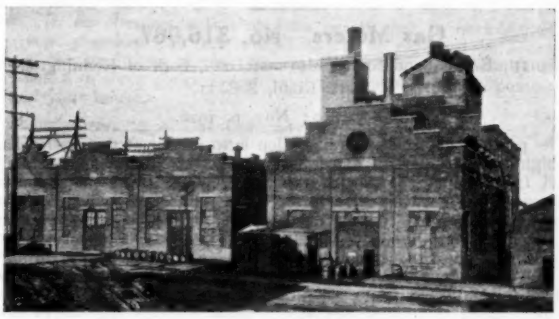
The installation of Glover-West vertical retorts is of the latest design, with several modifications to suit the local conditions. The system of heating the retort is by a series of horizontal combustion chambers, so that the temperatures may be varied along the length of the retort to suit the different classes of coal used. The speed of extraction of the coke regulates the coal throughput, and this, coupled with the heating system, makes a very flexible unit.

TYPICAL RESULTS.

A typical set of results obtained in the plant is as follows:

COAL. Dominion No. 12 Mine—	
Moisture	1·25
Ash	5·38
Volatile combustible matter	38·10
Fixed carbon	55·27
GAS—	
Calorific value, B.Th.U. gross	485
Make per ton, c.ft.	19,980
Therms per ton	97

The auxiliary plant at Halifax is arranged very economically on a restricted ground space, and the Engineer, Mr. K. L. Dawson, is to be complimented on the arrangement. The manufacture of steam from the waste heat of the vertical retorts is of primary importance, and a boiler of the Spencer-Bonecourt type has been installed as part of the contract. Whereas previously steam was purchased from the electricity undertaking, now, after supplying the retorts with the steam necessary for the production of water gas and feeding the exhausters and auxiliary plant, there is a surplus produced which is delivered to the electricity undertaking. A portion of the auxiliary plant which is of interest is the oil scrubbers for the removal of the "organic" sulphur remaining after the oxide purifiers. This plant is necessary because the Company are



under an obligation to supply gas containing not more than 35 grains of sulphur per 100 c.ft., and also because the Nova Scotian coals vary considerably in their sulphur content, which in some cases is as high as 6 p.ct.

The demand for coke in Halifax during the winter months is so great that apparatus for heating the settings with coal gas has been provided. The demand for a graded and smokeless fuel has steadily increased since the installation has been put to work, vertical coke readily conforming with these requirements. The Company are well equipped with a central showroom, where all types of the latest gas appliances are shown, and in which demonstrations are given periodically to show the steady progress that has been made in the use of gas during the present century.

Colour in the Kitchen

In these days when so much attention is being focussed on the movement for brighter homes, it is gratifying to know that our gas-appliance makers are not behind in their efforts to modernize and make cheerful that "hub of the home"—the kitchen. In this respect Messrs. R. & A. Main, Ltd., might be termed pioneers, in that they were the first in this country to manufacture all-enamelled gas cookers. This appears from a booklet "Colour in the Kitchen," which deals with the bright and cheerful appearance and quick and easy cleaning advantages of the firm's Deluxe "Mainamel" cooker. "Colour in the Kitchen" is being issued to inquirers as a result of the firm's advertising to the public. By directing such inquirers to the gas appliance showrooms the booklet should have a good influence on the demand for the highest class of gas cooker.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

The Institution Secretaryship.

SIR,—I hope no suggestion of desiring to interfere in a matter—the conduct of which will, I feel sure, meet with general approval—will be attributed to me if I venture to remind those to whom the task of selection of a Secretary for the Institution of Gas Engineers is referred, that their responsibilities, and the qualifications for the post, are changed very considerably by the granting of the Charter.

To fill this vacancy properly the Institution will need a gentleman possessing a high degree of scientific and technological training in gas engineering matters, with the addition of any general qualifications appropriate to such a position. For in my opinion the Institution must henceforth be regarded as standing wholly upon a scientific foundation, and not in any sense of the word upon a social one.

CHARLES CARPENTER.

South Metropolitan Gas Company,
709, Old Kent Road, S.E. 15., Sept. 3, 1929.

REGISTER OF PATENTS.

Intermittent Carbonizing Chambers.—No. 314,659.

WOODALL-DUCKHAM (1920), LTD., and DUCKHAM, Sir A. McD., both of Victoria Street, S.W. 1.

No. 16,793; June, 9, 1929.

The patentees point out that intermittent carbonizing chambers, such as gas retorts and coking ovens, normally have a gas off-take only at the upper part of the chamber; but owing to the varying volumes of gas generated at different stages during carbonization this off-take is sometimes capable of dealing with all the gas, so that pressures which may lead to serious leakage are set up inside the chamber. For this reason the chamber has been provided with an off-take near the bottom thereof, but the pressure has not been released automatically.

This invention provides in the bottom off-take an automatic device which opens when the pressure in the lower part of the carbonization chamber exceeds a predetermined maximum, and closes again when this pressure has been released.

There are an upper and a lower foul main, an up-take connects the upper with the lower main, a bottom off-take from the carbonizing chamber, and a liquor seal in the lower main normally closing the bottom off-take. Means are provided for spraying liquor from the upper foul main into the up-take; and there are a cut-off valve at the lower end of the up-take and a by-pass from above the said valve to the lower foul main. Sprays are situated in the up-take for the purpose of supplying liquor as herein described. The lower foul main thus operates as a seal for the bottom off-take.

Gas Meters.—No. 316,067.

SMITH, E. W., and SMITH METERS, LTD., both of Kennington Park Road, S.E. 11.

No. 32,830; Nov. 9, 1928.

The primary object of this invention is to permit of the mechanism of high-capacity meters, more particularly the valves, to be lubricated from points exterior of the meter without the necessity of using non-return valves or seals for these points, and which hitherto have been necessary to prevent unregistered gas being taken from the meter at these points.

Instead of the gas first passing into the attic and thence through the valves to the measuring chambers and back through the valves and to the outlet, it is passed direct from the inlet and valves into the measuring chambers, and thence back through the valves into the attic, by using the inlet and outlet of the meter as outlet and inlet respectively. By this arrangement the attic becomes what might be termed an outlet chamber containing registered gas. Lubricant is supplied to the interior of the chamber by tubes extending from nipples on the outside of the chamber; and these tubes are adapted to deliver oil directly over the valves. With this arrangement only gas which has been registered can be taken from the meter at the points.

The nipples preferably communicate with tubes leading to the parts it is desired to lubricate; the nipples being formed to receive the end of a hand pump.

Maximum Demand Indicators for Meters. No. 316,412.

SHEWRING, H., of Rochdale, GLOVER, W. T., of Oldham, and METERS, LTD., of Manchester.

No. 19,706; July 6, 1928.

This invention has for object to provide an improved construction of indicator which shall show, for example, the maximum consumption of gas in any hour and also in any day of any desired period of time.

The invention comprises the combination with a part operated by the metering mechanism to displace a member which can move the maximum demand indicating finger and a part operated by clockwork mechanism wound by hand, of a further mechanism operated by a spring which is maintained wound from the part operated by the metering mechanism, with means for preventing overwinding of said spring by the metering mechanism. The spring-operated mechanism is controlled by the clockwork mechanism for interrupting at predetermined intervals the drive between the metering mechanism and the member which displaces the finger, so that such member can return to its starting position while leaving the finger in its position of maximum displacement.

The invention further comprises an additional maximum demand indicating finger operated by mechanism geared to the mechanism operating the first-mentioned finger and controlled from the clockwork to interrupt the drive at longer intervals of time.

The foregoing constitutes two of the claims, while the third claim shows that the means for operating the member which can move the maximum demand indicating finger comprises a pawl and ratchet wheel (the latter serving to coil up a spring and to move a part which can engage a part to which the indicating finger is secured) and a conical member operated by the clockwork which releases the pawl from the ratchet wheel so that the latter can fly back to its starting position.

Gas Main Stopper.—No 316,334.

WILKINSON, H., of Slough.

No. 4833; Nov. 15, 1928.

This invention relates to gas main stoppers of the type comprising a collapsible spring frame fitted with a flexible diaphragm adapted to be lowered from a barrel-like casing into a main. The object of the invention is to provide an improved spring frame for carrying the flexible diaphragm and to effect other improvements in construction.

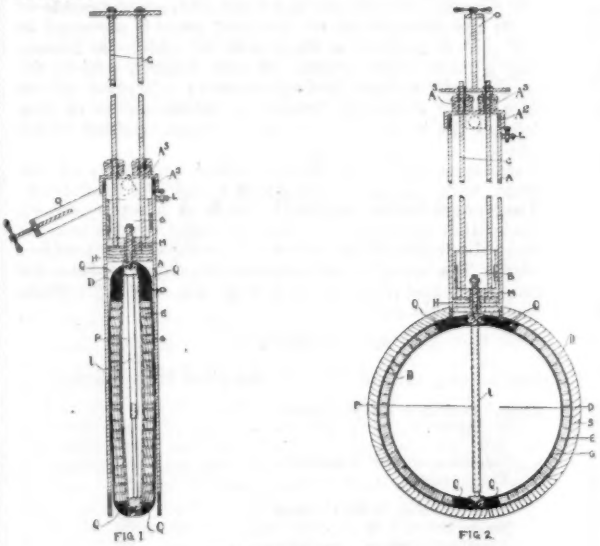


FIG. 1 FIG. 2.

Wilkinson's Main Stopper.

Fig. 1 is a sectional elevation of the device in the inoperative position, and fig. 2 is a similar view showing the device in use.

The device comprises a barrel A threaded at its base to screw into a correspondingly threaded hole in the main S, and closed at top by a threaded cap A^2. A sliding block B, disposed within the barrel A, is connected with rods C, which project through gas-tight slots A^3 in the cap A^2, and also to the flexible collapsible diaphragm D. The diaphragm D is carried on a frame of laminated springs G, between which and the diaphragm is disposed a series of coil springs E mounted suitably on the laminated springs. Pieces of felt Q are provided at the end of the laminated springs; the felt taking the place of coil springs at these points because otherwise the coil springs may foul the edge of the barrel A when in use. The edge of the diaphragm D when in use is exposed to friction against the wall of the gas main, and is therefore preferably made in leather, which is stitched to the other material of the diaphragm, if this is

not of leather. To reduce the possibility of gas escaping through the device, a felt washer H is disposed between the collapsible diaphragm and the sliding block.

In order that the operator shall know when the diaphragm is fully expanded, vent M and cock L are provided, and are in communication with the shut-off side of the main. A telescopic arrangement of rods P is provided to stiffen the diaphragm. A safety fastener O is pivotally secured to the barrel A, and serves to prevent the diaphragm from partially or entirely closing.

In operation, a hole is tapped in the main, and the barrel A is screwed into position. The rods C are depressed and the diaphragm is pushed down into the main, the pressure being continued until the diaphragm is fully expanded, thereby forming a total obstruction of the main. The diaphragm, by reason of the coil springs E, abuts tightly against the inner wall of the main, irrespective of any irregularities on the surface thereof. The arm O retains the diaphragm in its fully expanded position, as shown in fig. 2.

In a device made according to the present invention the diaphragm D is provided with a tubular ring which encloses the whole of the framework so that the interior of the pipe is in contact only with the diaphragm.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Aug. 8.]

Nos. 23,187—23,938.

HOLOPHANE, LTD.—"Directional street refractors." No. 23,288.
MACE, B. E.—"Electricity, gas, &c., meters." No. 23,857.
MARGUET, J. U.—"Gas producers." Nos. 23,411, 23,427.
METHUDY, C. E.—"Ignition devices for gas burners." No. 23,796.
SIEMENS-SCHUCKERTWERKE AKT.-GES.—"Electric purification of gas." No. 23,669.
SMITH, H.—"Domestic gas ovens." No. 23,322.
SPENCER, A. J.—"Gas heating stove." No. 23,470.
SUTHERLAND, LTD., A. G.—See Mace, B. E. No. 23,857.
WEST'S GAS IMPROVEMENT COMPANY, LTD.—"Retorts for distillation of coal." Nos. 23,620, 23,621.
WEST'S GAS IMPROVEMENT COMPANY, LTD.—"Retorts for carbonization of coal." No. 23,622.
WEST'S GAS IMPROVEMENT COMPANY, LTD.—"Gas producers." No. 23,623.
WHITFIELD, C.—"Gas producers." No. 23,861.

[Extracted from the "Official Journal" for Aug. 14.]

Nos. 23,939—24,540.

ALDRIDGE & RANKEN, LTD.—"Fixing gas retort mouthpieces." No. 23,998.
BECKER, A. C.—"Gas burners for gas-firing installation." No. 24,273.
BELL, N. M.—"Gas and electric fires." Nos. 24,215, 24,348.
BRITISH BRASS FITTINGS, LTD.—"Plug cock for gas." No. 24,330.
BROWN, R. W. WALKER-.—"Thermostatically controlled gas cocks. No. 24,238.
COLQUHOUN, J. F.—"Reflectors for street lamps." No. 24,253.
GES. FUR LINDE'S EISMASCHINEN-AKT.-GES.—"Purifying coke oven gas." No. 23,981.
GOULD, F. J.—"Gas lamps." No. 24,022.
(I. G. FARBENINDUSTRIE AKT.-GES.).—"Apparatus for manufacture of water gas." No. 24,020.
KROMSCHRODER, F.—"Prepayment gas meters." No. 24,508.
PARKINSON & COWAN (GAS METERS), LTD.—See Colquhoun, J. F. No. 24,253.
SIMMONDS, A. E.—"Gas compressors." No. 24,318.
SPERRYN, G. N.—See British Brass Fittings, Ltd. No. 24,330.
UNDERWOOD, A. J.—See Gould, F. J. No. 24,022.
WALKER, HUNTER, & CO., LTD.—"Toasting attachment for electric or gas fires." No. 24,493.
WOODALL-DUCKHAM (1920), LTD.—"Furnaces." No. 24,009.
YOUNG, H. M.—See Simmonds, A. E. No. 24,318.

[Extracted from the "Official Journal" for Aug. 21.]

Nos. 24,541—25,190.

CLIMIE, W.—"Gas producer plant." No. 24,672.
DUCKHAM, A. M.—"Coke ovens." No. 25,084.
GAS LIGHT AND COKE COMPANY.—"Carbonization of coal." No. 25,103.
JOHANN, C. S.—"Gas control systems." No. 24,942.
MULLER, W.—"Gasholders." No. 24,940.
SIDERFIN, N. E.—See Gas Light and Coke Company. No. 25,103.
SIMPSON, J. W.—"Gas cooking device." No. 24,848.
WELLS, W. R.—"Means to extract gas from coal." No. 25,016.
WOODALL-DUCKHAM (1920), LTD.—See Duckham, A. M. No. 25,084.

MISCELLANEOUS NEWS.

PROVINCIAL GAS DEAL.

Farnham Company Buys Alton Business.

We see from the "Financial Times" that another illustration of the amalgamation tendency exhibited of late years among gas undertakings is the absorption of the Alton Gas and Coke Company by the Farnham Gas and Electricity Company. The former dates back to 1847, and is a relatively small concern, with a paid-up capital of £5800.

There are also loans amounting to £1400. The growth of the district now necessitates the bringing of the service up to date, and the Directors consider it more economical to do this by fusion with a larger undertaking whose area of supply adjoins their own than by raising fresh funds—at least £10,000—which they might not find easy to do cheaply. No capital outlay of any extent has been incurred for a good many years.

The Farnham Company is paying £17,200 for the Alton undertaking, and, instead of enlarging the works in Hampshire, will supplement the local supply from its own station in Surrey and probably, in time, distribute from there entirely. It will be able to do this without raising the price its new customers now have to pay, which is higher than the rate in Surrey; in five years' time uniform charges in both areas are promised.

The Farnham Company, though 13 years older than the Alton undertaking, is a progressive and vigorous enterprise, and has almost metamorphosed itself in recent years. It now has a capital of £250,000, of which £201,500 is paid up, and, in addition, has debenture stock issues totalling £83,500. The district the Company is entitled to operate in embraces seven parishes. It has been generating electricity since 1912.

BAN ON USE OF GAS IN BARNSLEY COUNCIL HOUSES.

Eviction Threat.

A vigorous protest was made by Mr. E. G. LANCASTER, J.P., Chairman of the Barnsley Gas Company, at the annual meeting on Aug. 29, against what he described as the "un-English and unfair" action of the Barnsley Corporation in restricting their tenants to the use of electricity and threatening them with eviction if they installed gas.

The Barnsley Corporation in their housing schemes, said Mr. Lancaster, had spent vast sums of the ratepayers' money in building about 2000 houses, and told their tenants they should use only electric light in their houses.

Many tenants preferred to have gas for cooking purposes as well as electric light. To prevent this the Corporation had issued the following notice to municipal tenants:

> In no circumstances must you permit gas to be installed in your premises. If this is done it will be regarded as a breach of the conditions of your tenancy, and the Council will be compelled to serve notice to quit, and take steps to obtain possession of your house.

Their powers as a Gas Company were perfectly clear, said Mr. Lancaster.

On the application of an owner or of a tenant, they were entitled to supply gas to a house, and they would exercise that right when tenants applied for a supply.

The Gas Company was a big ratepayer to the Corporation. This year's rates amounted to £5000, or more than half of what they received as shareholders, and, therefore, they were entitled to share in any benefit in the expenditure of the ratepayers' money.

The whole proceeding was un-English and unfair. It made the tenants really into serfs of the Corporation by interfering with a man's undoubted freedom of choice.

Whether the threat to turn out the tenants wholesale would be carried out remained to be seen, as many of them were burning gas as well as electric light. All the Company asked for was a fair field and no favour.

KENT COALFIELD DEVELOPMENT.

Control of Gas Undertakings Acquired.

The following appeared in the City Notes of "The Times" last Monday:

Stockholders of the Folkestone Gas Company have accepted by a large majority the offer of the Tilmanstone Colliery for the purchase of their holdings. On Saturday morning—the option expired in the evening—it was known that about 90 p.ct. had accepted the offer, which was undoubtedly attractive, the price being £110 for £100 of stock, the market value of which before the offer was made was about 85½.

The Tilmanstone Colliery has now acquired a controlling interest in the East Kent Gas Company, the Deal and Walmer Gas Company, and the Folkestone Gas Company. The object of these purchases is to provide the colliery with an outlet for the gas which is to be produced in bulk by a low-temperature carbonization plant.

European Gas Company.—The Directors of the European Gas Company have decided to pay on Oct. 1, 1929, an interim dividend of 4s. per share, free of income-tax.

CO-PARTNERSHIP SCHEME AND HOSPITAL AND BENEVOLENT FUND AT ALDERSHOT.

Address of the Chairman, Mr. R. W. Edwards.

The Annual Meeting of the Co-Partnership Scheme and Hospital and Benevolent Fund of the Aldershot Gas, Water, and District Lighting Company was fixed for to-day, and we reproduce here the address of the Chairman (Mr. R. W. Edwards), in moving the adoption of the reports and accounts of the two schemes:

I should like to make one or two general allusions to the work of the past year and to certain aspects of the present position, both of the Company and the schemes which we are here to represent.

I was greatly struck by the following words appearing in a recent Public Journal, dealing with the changes in Parliamentary personnel caused by the General Election:

> We have never thought that the claim made for peace in industry during the last two years, in so far as it could be substantiated, was due to the services of politicians, but rather to the spontaneous coming together of representatives of employers and employees. We cannot help thinking that, whatever may be the hopes or disappointments of our members as politicians during the next two years, there will be an increased opportunity for those who desire to extend the securities of co-operation. How much this depends upon men of vision and goodwill in industry, and how little upon what a Government of any character can do, we are learning more and more.

This gets right down to the root principle of co-partnership, a principle which the gas industry was the very first to recognize, and of which that industry is still the stoutest defender and exponent. "Labour in loneliness is irksome," and it is good to feel identified with the co-partnership gas companies which form the largest group of co-partnership businesses in any one trade, there being fifty-two participating undertakings at the close of 1928, with an aggregate capital of over 77½ million pounds and a total number of members exceeding 42,000, who, since the inception of the various schemes, have benefited to the extent of more than 3½ millions.

"To be *first*, that is the idea. To do something, say something, see something before anybody else—these are the things that confer a pleasure compared with which other pleasures are tame and commonplace." Those are the words of Mark Twain, and such is the record of an industry with which we are proud to be associated; and, when one examines the desperately long and varied list of trades which have suffered the crippling influences of disputes, strikes, and other disturbances, and observes how extremely infrequently our industry figures therein, one finds the amplest and most convincing justification and vindication of co-partnership and all that it involves.

What I have said by way of general application, I emphasize tenfold in connection with our own Company and scheme, and I need not again mention in detail the loyalty of our workpeople, which has carried this large undertaking safely through times of acutest anxiety and stress, and enabled our public and national services to be maintained without interruption or limitation. Change is the handmaiden Nature requires to do her miracles with, and we are on the verge of great expansions in which it is a source of unbounded satisfaction to feel and know that we can reckon upon the fullest, and most enthusiastic, internal co-operation.

I wish I could say that, externally, the prospects were equally rosy; but unfortunately we are faced with some heavy problems, which will tax the efficiency of our administration, and which, I fear, may exert adverse influences, over which we, as individuals, will be unable to exercise the remotest control. The burden of district rates increases year by year, and the recent re-valuations have imposed a heavy additional incubus. It is not customary on these occasions to refer to our domestic affairs; but as our policy is so dependent upon efficient and economical public service, anything which strikes at our roots constitutes both a handicap to our progress and a menace to the successful inter-relation of interests which should subsist in all public utility concerns between the consumers, the shareholders, and the workpeople.

Heavy Rates.

As I address you here within the Borough of Aldershot I may, perhaps, appropriately refer to the application of this matter as it touches the Company in this place. In the twelve months immediately preceding the war, the rates paid in Aldershot by this Company were £2142, whereas, computed on the basis of the six months ending in September, our liability for the current year will be no less than (approximately) £10,500. Such an enormous increase is somewhat staggering to contemplate, and I must confess I amazed myself—as, no doubt, I shall astonish you—to find that this figure represents a contribution to the town's finances of some £2 10s. per inhabited house, or £7 10s. per acre of land within the Civil Borough. This means that, before we can hope to derive any profit from our local consumers, we must find fifty shillings per annum on every service—assuming that all the houses in the Borough are connected to our mains. Another point of view which more vitally concerns you as co-partners lies in the fact that the proportion of these rates applicable to gas will represent, on the net sales in Aldershot, an increase per 1000 c.ft. of something like 350 p.ct., or four-and-a-half times heavier than pre-war. It must be patent to the most casual observer that the method of assessing public utility undertakings which can result in the imposition of such burdensome valuations needs some modification if our progress, and indeed our very existence as a manufacturing concern in this Borough and elsewhere, is not to be jeopardized.

Such has been the wider view of the national associations concerned with our industry and of the Conjoint Conference of Public Utility Associations, and most urgent representations have been, and continue to be, made that some measure of relief should be afforded to these bodies. There are glaring anomalies in the present system, and the need is urgent that public utility companies (at present excluded from the Government Derating Scheme) should be valued upon a basis definitely related to their profit-earning capacity, and that their assessments should be adjudicated by an entirely impartial tribunal, to whom should be entrusted the duty, not only of deciding upon the common basis of valuation, but of apportioning the total value among the several rating areas. In a case such as ours, involving at the moment assessments in thirty-four different parishes within the four counties of Hampshire, Surrey, Berkshire, and Sussex, and envisaging the early addition of very many more parishes to that number, the relief which would be afforded both to the Rating Authorities and the Company would indeed be a godsend, to say nothing of the saving of public funds which would result.

I have dwelt at some length on this theme, because I do feel that it is one of our current problems the effects of which are likely to impede that degree of steady and efficient progress which is our constant aim.

I now propose to deal briefly with the individual schemes.

Co-Partnership.

The bonus for the past year was at the rate of 6½ p.ct., and if we do not meet with unforeseen adverse circumstances before next June, the bonus for the current period will, we hope, be £8 6s. p.ct. based upon the present price of gas—viz., 11·2d. per therm in "A" area. I am bound to refer a little uncertainly to the possibility of adverse circumstances, since the markets in coal and residuals are none too firm. Coals are steadily rising in price, and I fear the limit has not by any means been reached, while residuals, especially liquid products, are extremely flat. We have tried to do our best for all concerned by making contracts on both sides as favourably as possible; but the combination of these two factors—dearer coal and cheaper bye-products—may preclude quite such rapid reductions in the price of gas as we should like to see.

I am glad to see that our members are again steadily increasing the amounts put away into the savings fund, and it cannot be too forcibly emphasized that this, in the words of the report, is an "excellent opportunity of building up a banking account, and at the same time, accumulating interest at Bank Rate, with a minimum of 5 p.ct." Actually, at present, the Bank Rate is 5½ p.ct., so that members get a much better return than the Government or the Savings Banks can offer, while the cash is readily available on demand should occasion arise.

I am also happy to offer a word of welcome to representatives from our new districts who join us here for the first time, and I am sure that they will contribute to the success and prosperity of our united Company, and perpetuate our mission of "Service to the Public."

Hospital and Benevolent Fund.

Once again, a glance at the report and accounts of this admirable institution illustrates the enormous amount of good work done throughout the year, and one need only be moderately endowed with imagination in order to read between the lines of the balance-sheet values which cannot be set down in cold figures. The scheme is as flexible as it is possible to make it, and every case reported to the Committee is dealt with upon its merits as generously as the funds permit.

Perhaps one of the happiest features of this work is that it gives the employee a great sense of security to feel that not only is the fund designed to meet disaster and sickness overtaking himself, but extends also to his family or dependants.

Sports and Recreation Club.

The social and recreative sides of our welfare system have also flourished during the year, and our cricket and tennis teams have again distinguished themselves. Of the eighteen cricket matches played, ten have been won and two drawn, while the tennis section have "swept the board," winning the whole of their nine matches, in most cases by very comfortable margins. The ancient game of bowls also claims its devotees, though it is the youngest section, measured by the number of seasons in which facilities have been available. Some quite able exponents are now coming forward, and no doubt we shall be hearing more of them in team work and matches before long.

The Directors want you all to feel that the best acknowledgment you can make to them for the thought and money expended upon the provision and laying out of the necessary grounds lies in your enjoyment and fullest use of the facilities afforded, and we hope to see the spirits of good sportsmanship and co-operation increasingly fostered and exhibited.

CHICHESTER GAS COMPANY MEETING.

Tributes to Late Mr. W. A. Walker.

Mr. JOSEPH CASH, M.Inst.C.E. (Chairman), presided over the ordinary half-yearly meeting of the Chichester Gas Company, held at the Gas-Works, Chichester, on Aug. 27. He was supported by Mr. Frederick Hoyland and Mr. T. N. Ritson, A.M.Inst.C.E. (Directors).

In moving the adoption of the Directors' report and accounts the CHAIRMAN said: Before dealing with the accounts, I would like to call your attention to the item in the Directors' report announcing the resignation of your Chairman, Mr. W. A. Walker, owing to illness. For some 28 years he has been a Director of the Company, out of which he had been Chairman for 18 years, and in him the Board has lost a valued colleague, and the Company a Director who took a keen interest in its affairs as long as his health permitted. It is now with deep regret I have to inform you that our old friend passed away so recently as Friday last. I know that you will wish with me to rise as a mark of our appreciation for one who has worked so untiringly at the head of this concern over such a long period, and who has been laid to rest to-day.

The vacancy on the Board has been filled by your late Engineer and General Manager, Mr. T. N. Ritson, A.M.Inst.C.E., who, after some 15 years' service with the Company, has resigned his appointment to obtain relief from the daily responsibility which it involved.

FINANCIAL RESULTS.

I will now turn to the accounts, and you will see the capital expended has been outset by the amount credited by depreciation, a good sign. The revenue account calls for little comment. Coal, &c., cost £3825, against £4045, or £220 less; but this gain is unfortunately set off by the loss of £374 on residual products, due to fallen markets for coke, tar, &c., which is a feature in all gas companies' accounts. Rates and taxes are up (£542, against £429) due to the new Valuation Act, but the Company are making an appeal for the reduction of the new assessment, which they consider is excessive, and we await the result. Turning to the credit side, the gas rental is £10,872, against £10,739, or an increase of £133, which is satisfactory, as it has been made largely on a decreased price. The gas sold shows an increase of 5½ p.ct.; rental of meters, stoves, and fittings amounts to £1388 against £1356, an increase of £32. Residual products, £1204, compared with £1578, or a decrease of £374, is the only disappointing feature in the accounts. The final outcome is a profit of £2366, which leaves a small surplus when maximum dividends, &c., have been paid.

The report and accounts were approved.

The CHAIRMAN then recommended the declaration of a dividend for the half-year ended June 30, at the rate of 10 p.ct. per annum upon the "A" capital stock, and 7 p.ct. per annum on the "B" and "C" capital stocks, and this was approved.

Mr. K. R. MACKAY, on behalf of the shareholders, proposed a vote of thanks to the Chairman and Directors, Mr. W. Ellis (the Secretary), the staff, and the workmen.

ROMFORD GAS COMPANY.

Satisfactory Increase in Sales.

The half-yearly meeting of the Romford Gas and Coke Company, Ltd., which, by Act of Parliament, will in future be known as the Romford Gas Company, was held on Aug. 24, at the Gas Offices, Romford—Mr. BEVONS J. SMITH, Chairman of Directors, presiding.

Before dealing with the usual half-yearly business, the CHAIRMAN briefly referred to the Bill, which the Company promoted in Parliament at the end of last year, by which the present Company, known as the Romford Gas and Coke Company, Ltd., was dissolved and all members of the Limited Company incorporated by the name of the Romford Gas Company. This Bill received the Royal Assent on July 26 last, and will come into operation on Jan. 1, 1930.

The CHAIRMAN then said: I will now pass on to review the past half-year's working, and I assume, as is our usual custom, that you will take the report, accounts, and auditors' report as read. Once again I find myself, together with your Directors, in the satisfactory position of being able to congratulate you upon a successful half-year's working, the result of which reflects credit upon all concerned.

Extensive building operations are still being carried out over all our district, and this means ever-increasing demands for gas and various appliances, all of which show a very satisfactory gain upon the corresponding period of 1928. At the present time we are connecting-up about 200 houses per month.

The half-year's sale of gas has risen from 196½ million c.ft. to 225½ millions—an increase of roughly 29 millions, equalling 14·69 p.ct. The number of consumers added to the rental roll during the half-year is 798, bringing the total number up to 12,369. Appliances, such as cookers, fires, coppers, geysers, and radiators, have been in great demand, the total bookings being 905 for the half-year.

FINANCIAL RESULTS.

Turning to the capital account, you will notice that the laying of new mains has called for an expenditure of £7917, which means that during the half-year mains have been laid representing 7·63 miles. This shows, I think, very plainly the growth of the Company. A sum of £2709 has been expended on new meters to meet the requirements of new consumers, and £5240 for stoves and new appliances; but, on the other hand, receipts from rental purchase account, together with stoves actually sold, more than counterbalance this expenditure. The usual amount for depreciation on gasholders, meters, and stoves has been duly written off. Referring to the revenue account, the expenditure on coal has advanced from £10,729 in 1928 to £12,067 in 1929, owing to an additional 1083 tons having been carbonized during the half-year. The average price per ton has been slightly lower than in 1928. More oil has also been used, but here again I am glad to add that the average price per gallon has dropped.

On the credit side of the revenue account, we find that the sale of gas, meters and stove rent, prepayment meters, and fittings have produced a total gas rental for the half-year of £54,740, and expenditure to £44,329, leaving a net revenue profit of £10,411, which, after paying the usual dividends of 7½ p.ct. and 6 p.ct. on the ordinary capital, the usual preference dividends, debenture interest, and other charges, including £1029 to reserve fund, leaves a balance of £401, by which amount the carry forward has been increased, which is now £3870.

Unfortunately the market for residuals has not improved during the half-year, and though the actual receipts are higher by £486, owing to the additional tonnage of coal carbonized, the prices realized have been less than in 1928 for both coke and tar. In respect to ammoniacal liquor, there is still a slight debit balance.

PROGRESSIVE POLICY AT COLWYN BAY.

Gas Supply for Penrhyn and Glan Conway.

Pursuing its policy of "fairy godmother" to the new residential resorts outside its own area, Colwyn Bay Council proposes to expend about £10,000 on conveying gas supplies to Penrhyn and Glan Conway, both places situated in the district of Conway Rural Council.

The scheme was submitted to Mr. J. Gardner, M.Inst.C.E., of the Ministry of Health, in the Colwyn Bay Council Chamber on Wednesday, Aug. 28. Among those present were Councillor John Holman (Chairman of the Lighting Committee), Messrs. James Amphlett (Clerk), James Smith (Gas and Electricity Engineer), W. J. Dunning (Surveyor), and H. Blythe (Gas Department).

Mr. AMPHLETT asked that the loan might be granted for the longest possible period. The scheme would involve no increase in Colwyn Bay's rates, and it was anticipated that the investment would prove remunerative.

When the Inspector asked if there was anyone present to oppose, there was no reply.

Councillor HOLMAN: I think there is no opposition.

Mr. AMPHLETT said the outlying districts in question had for years been applying to Colwyn Bay Council to assist by supplying them with conveniences which they were unable to obtain for themselves. An electricity scheme had already been carried out to these localities and to Llangystenin, another neighbouring parish also under the jurisdiction of Conway Rural Council. There was under consideration a scheme of sewerage disposal for Penrhyn, and a deputation of the two authorities would shortly visit the Ministry of Health to discuss terms. In response to many appeals for gas, the Council had obtained an order extending their lighting area so as to embrace the rural villages which were developing so rapidly into charming residential resorts.

The INSPECTOR: Your order says you must give these supplies within five years, otherwise you lose your powers. Are you putting forward the present scheme now deliberately to keep within the time limit, or because these people have asked you?

Mr. AMPHLETT: Solely because they have asked us and are most anxious to have these lighting facilities. We are doing it at their request, and we feel that we are helping the smaller authorities whose areas are becoming urban in character. They could not obtain such facilities for themselves.

Replying to the Inspector, Mr. Amphlett said that the Engineer's department made a canvass in 1924, and the number of prospective consumers at that time in Penrhyn was 180, while in Glan Conway the number was 150. Since that date there had been a further increase of building in both resorts. Both places were anxious to have the supply in the coming winter.

Mr. JAMES SMITH, in answer to the Inspector, said the charges for gas at Colwyn Bay were as follows: Domestic, 3s. 4d. per 1000 c.ft.; public, 2s. 6d.; power, 2s. 11d. The charge in the outside districts would be 10d. per 1000 c.ft. more. He was wishful to lay the mains to Glan Conway simultaneously with the great road-widening scheme contemplated by the County Council, towards the cost of which the Ministry of Transport were contributing 75 p.ct.

Mr. DUNNING said he had been informed that this work would be commenced in the winter, so as to provide work for the unemployed.

Mr. SMITH, giving details of the scheme, said it was proposed to spend £851 within the urban area, from the Ship Hotel along Llandudno Road to the boundary at the old toll-bar. Building was going on there at a rapid rate. In Penrhyn parish it was intended to lay trunk, distributing, and service mains at a cost of £4686. It was also intended to place in Penrhyn, as soon as practicable, a district holder which would be supplied by a high-pressure main, but he had not yet secured a site. At Glan Conway, the high-pressure, trunk, and service mains, together with the district holder, were estimated to cost £4625. Land had been acquired as a site for the holder and other purposes not yet decided upon.

The INSPECTOR laid stress upon the purchase of pipes and other materials being done by open contract.

Mr. SMITH said the applications for tenders would be made in the form of advertisements.

Councillor HOLMAN, supporting the application, said the Lighting Committee, of which he had been a member for seven years and Chairman for two years, were unanimously in favour of the scheme as a result of the pressing appeals made to them by the rural locali-

ties. The Committee had always adopted the policy of open tenders. He moved a vote of thanks to the Inspector.

Mr. J. W. ADAMSON (Vice-Chairman of the Council), who seconded, said the scheme was part of their progressive policy. There was no doubt that the adjacent rural parishes were to be congratulated upon the willingness and the ability of Colwyn Bay Council to supply their needs.

The Inspector, accompanied by the Engineer, visited the localities in question.

CHEAP GAS SUPPLY FOR GLASGOW.

Committee Recommend Acceptance.

The Gas Committee of Glasgow Corporation have agreed to recommend acceptance of an offer by John Gardner Collieries, Ltd., to supply to the city 20 million c.ft. (or 96,000 therms) of gas per day at a cost of 1·75d. per therm, or 8·4d. per 1000 c.ft.

Should the Corporation adopt the proposal, it is expected that when the full new supply is forthcoming three years hence, the price of gas to the consumer will be reduced to 2s. 6d. per 1000 c.ft., compared with the present cost of 3s. 6d. per 1000 c.ft.

PIT-HEAD PLANT.

The Colliery Company's offer has been under consideration by a special sub-committee of the Gas Committee for a considerable period. The gas to be supplied to the Corporation will be a bye-product of the Bussey process, and it is understood that the plant will be erected at the Company's pits either at Kenmure Hill near Tollcross, or at Mount Vernon. The erection of the plant will not be proceeded with until the Corporation has given its decision, and when the work is begun it is considered probable that two years will elapse before the installation will be completed.

It is estimated that at the end of two years the cheaper cost of the gas should enable the Gas Department to announce a reduction from 3s. 6d. per 1000 c.ft. to 3s. 3d., and that after a full year's working the cost to the consumer should be about 2s. 6d. per 1000 c.ft.

NO CARRIAGE CHARGE.

The cheapness of the Company's price, of course, is accounted for by the fact that the gas supplied to the city will be a bye-product, and also the fact that carriage costs will be completely eliminated, the coal being dealt with at the pit-heads. On first consideration, there appears to be an almost unjustifiable difference between the Company's charge of 8·4d. per 1000 c.ft. and the Corporation's price of 3s. 6d. per 1000 c.ft. It has to be remembered, however, that the Gas Department is still working off the deficit brought about by the general strike of 1926. The price of 3s. 6d. per 1000 c.ft. is made up as follows: Standing charges, 1s. 6d.; distribution, 9d.; rates and taxes, 3d.; cost of gas at holder, 1s.

Under the new scheme the price paid by the Corporation for 20 million c.ft., or 96,000 therms, per day for a year would be £255,500, whereas, were the same quantity to be produced by the Department's own plant it would cost £365,500.

QUESTION OF UNEMPLOYMENT.

The scheme involves the serious question of unemployment. The quantity of gas negotiated for, it is stated, is sufficient to supply the entire present consumption of the city during the summer months, so that it becomes obvious that a large proportion of the labourers employed at the Corporation's gas-works would be unemployed in the summer season. It is pointed out, however, that the Corporation plant will always be required as a stand-by in the event of accident preventing supply from the collieries being available.

It is also hoped that the lower cost of gas to consumers will induce its more extensive use both domestically and industrially so that as far as possible the Corporation employees may be retained as at present.

About 15 p.ct. of the output of gas in the city is at present used for industrial purposes, and it is considered that that quantity might be greatly increased were more favourable prices quoted.

Gas Exhibition at Bristol.

The Bristol Gas Company have had a very interesting and attractive show at Bristol's Annual Industrial Exhibition, which was opened by the Lord Mayor at the Colston Hall. At their stands the Company demonstrated the effective manner in which gas can be utilized in the home, the shop, and the factory, and the various labour-saving appliances for cooking and heating purposes have commanded a great deal of public attention. A feature of the show has been the famous "auto-controlled" gas cookers, and modern ventilating gas fires, which can be obtained for cash or on the hire-purchase system. There was also a capital display of up-to-date gas fittings and burners, and members of the Company's staff were in attendance at the Exhibiton to give information as to how gas can be used for domestic and industrial purposes. A series of cookery lectures organized by the Gas Company have also been given by Miss E. M. Simcock in the Little Theatre which adjoins the Colston Hall, and these have been largely attended.

Swansea Gas Light Company.—The Directors of the Swansea Gas Light Company announce an interim dividend on the ordinary shares at the rate of 4 p.ct. per annum, *less* tax.

WATFORD GAS AND COKE COMPANY.

Co-Partnership Scheme Annual Meeting.

The General Meeting of the Watford Gas and Coke Company's Co-Partnership Fund Members was held in the Board Room at the Works on Thursday, Aug. 29. In the absence of Mr. E. J. Slinn, the Chairman of the Company, Mr. W. S. COLES presided, supported by Mr. C. F. Hollingsworth.

The CHAIRMAN, in moving the adoption of the report and accounts, said: To-day we hold our twentieth annual co-partnership meeting, and as your Chairman, it is my pleasure and privilege to move the adoption of the accounts, balance-sheet, and report. Before I do this, however, I should like to follow my practice of past years, and go over with you the various items of the particulars which have been handed to you. The bonus and interest for the year is £1307, and while the interest included in this amount is up by £10, the total shows an actual drop of £16 6s. 4d. This is not brought about by any decrease in the number of employees of the Company, but is through several of the co-partners leaving the Company's service to take up work elsewhere, and to some of your number being placed on pension. Newcomers, who have taken their places, have not at present come into the full benefits of the fund. This year you will find contributions have decreased by £98 7s. 6d. when compared with last year's figures. This is a very heavy drop, and is no doubt due to the fact that the contributions to the new pensions fund have caused co-partners generally to reduce their deposits in the Co-Partnership Fund. If this is so, then it is all to the good, as the pension fund, when established, as I told you last year, will provide you with a very substantial pension when it comes to your turn to retire. While deposits are much less than last year, withdrawals from both the withdrawal account and trust account are very much less than in 1928. From the withdrawable account there has been withdrawn a sum which is £325 7s. 8d., and from the trust account £301 7s. 9d. less than in 1928. So far as the withdrawable account is concerned, it appears to me that you have been more careful with your withdrawals. So far as the trust account is concerned there was not, until very recently, much stock available for distribution. Hence the big drop in cash withdrawn. In September, however, all those eligible will have an opportunity of putting their savings in the trust fund to good use in the Company's stock, as the distribution of over £600 will then take place. A sum of £15,158 has been invested in the Company's "A" and "B" stock, and of this sum there has been distributed £1199 "A" stock and £12,808 "B" stock, valued at £14,133.

PENSION FUND.

So far as the pension fund is concerned there is very little to add to what I said last year. Strangely enough, in spite of some members dropping out, the number added to the pension fund brings the total to the same figure as was reported at the annual meeting last year—namely, 186. In a few weeks we hope to have the special order through which will put the fund on a secure basis, and we trust conform with the requirements of the Board of Trade and the Commissioners of Inland Revenue. The Trustees have £50 "A" and £1000 "B" stock in hand for distribution on the lines stated previously, and cash at bank and bonus and interest due amount to the sum of £2139. Some of this money will be invested in the Company's stock, as, and when, it becomes available.

It was resolved, on the motion of Mr. W. S. COLES, seconded by Mr. F. H. HOLLINGSWORTH, that the balance-sheet and report of the Committee as presented to the members for the year ended June 30, 1929, showing a balance in hand of £3164, should be adopted.

Mr. W. C. CHERRY was re-elected to serve on the Committee as co-partners' representative.

A hearty vote of thanks to Mr. W. S. Coles for presiding brought the meeting to a close.

CONTRACTS OPEN.

General Stores.

The Gas Committee of the Bradford Corporation invite tenders for general stores. [See advert. on p. 518.]

Lamp Pillars.

The Lighting Sub-Committee of the City of Sheffield invite tenders for the supply of lamp pillars. [See advert. on p. 518.]

Pipes, &c.

The Gas Committee of the Bradford Corporation invite tenders for the supply of, among other goods, pipes and specials. [See advert. on p. 518.]

New Meter Testing Station in Birmingham.—The Justices' gas meter testing station of the Birmingham Gas Department at the Lord Street works has recently been extended, and on Aug. 28 Mr. R. H. Carter, of the Board of Trade, made a formal inspection. He was accompanied by Mr. Cornelius Chambers, Chairman of the City Justices' Gas Testing Committee, and Mr. R. J. Rogers, of the Gas Department. The new testing rooms at Lord Street have been opened in order to save the cost of transporting the meters to the central testing station at Sheep Street, where the meters have been tested, in the interests of consumers, by the city justices' inspectors. Though the extension is situated at the Lord Street works of the Gas Department, where meters are made and repaired, it is conducted entirely independently of the Department, and only the justices' inspectors have access to the testing station.

OVERSEAS OPPORTUNITIES.

[Extracted from the Board of Trade Journal.]

British India.

89,000 *Ft. of Rising Main, Specials, Sluice Valves, Air Valves, &c., for the Jaipur Water Supply Scheme.*—H.M. Trade Commissioner at Calcutta reports that the Indian Stores Department, Simla, is calling for tenders, to be presented in India by Sept. 16, 1929, for the supply of the above. Firms desirous of offering materials of British manufacture can obtain further particulars of this call for tenders upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W. 1. (Ref. A.X. 8418.)

Chile.

Incinerating Plant.—H.M. Consul-General at Valparaiso reports that the Municipality is calling for tenders, to be presented in Valparaiso by Oct. 29, for the supply of an incinerating plant of the high-temperature type capable of reducing to cinders 100 tons of unselected refuse in 24 hours. Firms desirous of offering plant of British manufacture can obtain further particulars of this call for tenders upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W. 1. (Ref. A.X. 8412.)

TRADE NOTES.

Morris Jib-Cranes.

From Messrs. Herbert Morris, Ltd., of Loughborough, we have received an interesting booklet and catalogue of Morris jib-cranes. These cranes are designed for an exceptional number of purposes, and a very considerable range of types and sizes, together with full specifications, is included in the list.

Parkinson National Advertising Campaign.

In connection with their national advertising campaign, the Parkinson Stove Company, Ltd., occupied a whole page for their announcement in a recent issue of the "Morning Post." As a matter of general interest to the industry, the Company are reproducing this in to-day's issue of the "JOURNAL," and intimate that full-size reprints on art paper, mounted or framed, for showroom display, will gladly be supplied on request.

A New Type of Gasholder for York.

Messrs. Ashmore, Benson, Pease, & Co., Ltd., of Parkfield Works, Stockton-on-Tees, have received an order for a "Klonne" type dry gasholder, of 2 million c.ft. capacity, from the York Gas Company. This is the first gasholder of its kind to be built in the British Isles. It will be 126 ft. in diameter by 180 ft. 6 in. high, and access to the piston from the top will be by means of an electric hoist. No pumps are required with this type. A number of these "Klonne" dry gasholders are being erected on the Continent.

Bell's Asbestos—Change of Address.

The Directors of Bell's Asbestos and Engineering Supplies, Ltd., announce that they have transferred their Head Office to their works at Slough. All communications hitherto sent to Asbestos House, Southwark Street, London, S.E. 1, should henceforward be addressed to Bestobell Works, Slough, Bucks. Telegrams: "Bestobell, Slough." Telephone: Slough 830. It is expected that the new London offices and warehouse will be ready for occupation in about three weeks' time. Meanwhile arrangements have been made for the counter trade to be carried on at the old Southwark Street address.

"Leach-Woods" Propeller Fans.

Messrs. S. G. Leach & Co., Ltd., of 26-30, Artillery Lane, E. 1, have published a folder on their "Leach-Woods" propeller fans as designed to meet the need for fans complying with Home Office requirements when used under conditions where cellulose and other inflammable gases are present and require extraction. The fan will undoubtedly interest all engineers, bearing in mind that, apart from the Home Office requirements for any particular factory, the design of fan is admirable for use in industries such as laundries, where steam or moisture require removing, and other applications such as fume cupboards, battery rooms, &c.

Beaumont Gas Operated Refrigerator.

An account appeared in the "JOURNAL" some weeks ago (May 15, p. 406, and May 29, 526) of a new and inexpensive automatic gas-operated refrigerator, known as the "King of Cold," and marketed by Messrs. Kirk & Standen, of 360, Boulevard National, Marseilles. The manufacture of the "Beaumont" refrigerator for France, as well as for Europe and non-English-speaking countries generally, is now in the hands of a group with headquarters in Paris; and we understand that production on an extensive scale is contemplated. As regards Great Britain and the United States, the patent rights have been acquired by a Syndicate, whose London representative, Mr. G. A. Turner, 87, Victoria Street, S.W. 1, will be pleased to answer inquiries.

The "Plus" Extension Rule.

Messrs. F. Turner, Ltd., of 61-63, Summer Hill Street, Birmingham, have sent us a folder dealing with their new patent—the "Plus" extension rule. The rule is in two parts—viz., the inner rule graduated in inches and fractions, and the outer casing. The outer casing is in metal, and made exactly the same length as the rule, but is not graduated. By simply sliding the inner rule out of the casing, any measurement, within the capacity of the rule, can be read off—the measurement shown on the graduated rule being added to the length of casing. A 2/4 foot rule will give any measurement between 2 ft. and 4 ft. immediately, and for lengths under 2 ft. the graduated portion only is used. If long measurements are required, two or more complete rules may be employed.

COAL TRADE REPORTS.

From Our Own Correspondents.

NORTH-EAST COAST.

There is again a pronounced shortage of tonnage, which is causing considerable irregularity in the market. While the position is intrinsically sound, many collieries are short of team, and buyers with handy boats are able to obtain some cheaper coals. With the large quantities to be shipped under contract over the rest of the year, the position can only be regarded as temporary, and, when more tonnage becomes available, prices will no doubt stiffen up again. Prospects for the immediate future are, however, not good for the collieries, and there is quite likely to be idle time at some pits.

Wear Special gas makes are still firmly quoted at 17s. 6d. f.o.b., while bests are 16s. 9d. to 17s. Seconds are 15s. 6d. to 15s. 9d., and rather easy in places. Coking is nominally 16s. 3d. to 16s. 9d., and firm for forward business; but some cheaper parcels have been offering for prompt shipment owing to the tonnage position. Durham bunkers are quiet; best makes easier at 16s. 6d. to 16s. 9d., and others plentiful at round 15s. 6d. Northumberland steams are quoted at 15s. 9d. to 16s. for best screened.

Gas coke stocks are not unduly high, and the price is steady at 21s. 6d. f.o.b. for shipment.

YORKSHIRE AND LANCASHIRE.

The demand both on export and home account continues steady, with recent prices maintained. Best hards stand at 18s. per ton f.o.b. There is an increased demand for gas coal and a better request for coke-making slacks. Most classes of industrial fuel are also in increased demand. Bunker coal is quieter. Household coal is in good request, with normal prices at the pit-head. The home consumption of washed nuts and smalls is better, and there is some difficulty in prompt delivery. Quotations are as follows: Washed trebles 18s., doubles 17s. 6d., singles 16s. 6d., and smalls 15s. 6d. per ton f.o.b. Furnace coke continues in steady request, with quotations of 22s. 3d. to 23s. per ton f.o.b.

The Humber bunker and export prices are the same as last week.

MIDLANDS.

There is a slow broadening of business, but the tone of the market is still hesitant. Early September sales of house coal are naturally discounted by the acceleration of business during late August in anticipation of an advance of prices. Collieries are moving very cautiously. In the area covered by the Five-Counties Scheme competition from unassociated pits is a factor to be reckoned with, particularly in some of the outer districts.

The September advance averages about 1s. Revised lists are accompanied in many cases by an intimation that there will be a further advance at the beginning of October. That output is being very closely adjusted to demand is evidenced by the sparseness of spot lots. There is no new feature in the industrial coal market. Deliveries are being taken regularly; but consumers are not showing very much concern about forward supplies.

Coke is in brisk request for winter use in greenhouses, as well as for central heating and other domestic services. Blast-furnace coke can still be bought at 16s. 6d. at the ovens, for restricted tonnages. The price more generally required, however, is 17s. There is no noticeable stringency with regard to works slacks. Good rough samples range from 6s. 6d. upwards; best grades fetching 11s., while "D.S." nuts command 11s. to 14s.

Bradford and Coke Oven Gas.—At a meeting of the Bradford Corporation Gas Committee on Aug. 30, the Manager (Mr. E. J. Sutcliffe) reported that he had been approached by representatives of the Low Moor Coke Oven Company with reference to a proposal that the Corporation should take gas from the Company. He was authorized to continue negotiations.

Oswaldtwistle Gas Department.—In the annual report of the Oswaldtwistle Gas Department, Mr. A. F. Ames, the Engineer and Manager, records that gas sold was 116,798,200 c.ft.—a decrease of 1,079,900 c.ft. on 1928, and of nearly three millions compared with 1927. This decrease, it is stated, is not very serious when the depressed state of trade is taken into account, and that the development of the district has been practically at a standstill. The decrease in domestic supplies was 2,313,800 c.ft. Unaccounted-for gas decreased from 9·74 to 8·32 p.ct., due, no doubt, to scrapping the old gasholder, which was leaking, and replacement of defective meters, numbering 400 during the year. The gas made averaged 14,342 c.ft. per ton of coal carbonized, against 14,188 the previous year. The sale of residuals was 12s. 2d. per ton of coal carbonized, against 15s. 10d. the previous year. The decrease in receipts from residuals against 1925 is equal to 7¼d. per 1000 c.ft. of gas sold. The total cost of gas manufactured was 2s. 4·69d. per 1000 c.ft., and the net cost 1s. 5·34d. Much had been done to bring the works and plant to a degree of efficiency. The old 2-lift column guided holder had been replaced by a 4-lift holder of the spirally guided type. The increased storage gave a greater margin of safety during maximum demand and conduced to more economical working. New offices had been built, and a 20-ton weighbridge fixed. The gross profit was £3739, equal to 10·03 p.ct. of the outstanding debt, against £5734 last year. The net profit was £841, compared with £3039. During the last five years £14,069 expended on capital work had been met out of profits. Net indebtedness at the end of the year was £37,278, against £28,353, the increase being due to the construction of the new gasholder.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Sept.* 2.

There are but few changes to report in the tar products market.

Pitch is rather firmer; to-day's price being about 47s. 6d. per ton f.o.b.

Creosote for export is unchanged at 6¾d. per gallon f.o.b.

White spirits also remain practically unchanged; pure toluole being 2s. 3d. per gallon; 95/160 solvent naphtha, about 1s. 5d.; and pure benzole, 1s. 11d.

Pyridine bases are 3s. 9d. to 4s. per gallon.

Tar Products in the Provinces.

Sept. 2.

Markets for tar products remain steady, and it is pleasing to be able to report that the better tone continues.

Pitch is still very firm. A fair amount of business has been done for delivery both for this year and the spring of next year on the basis of 47s. 6d. f.o.b. Probably manufacturers would be willing to sell some further quantity at this figure; but many of them are quoting 50s., and in nearly every case they are refusing to quote for delivery beyond the first half of next year.

The market for creosote is steady, and there is no alteration in the value.

Crude carbolic.—The competition for this material is still very keen indeed. Crystals carbolic are very firm, and 8¾d. per lb. has been paid to the end of the year. The demand for pure naphthalene continues, and business has been done in fair quantities for some period ahead.

Water-white products.—The demand continues for pure products, while for the ordinary qualities there is a steady business passing.

The average prices of gas-works products during the week were: Gas-works tar, 25s. to 30s. Pitch—East Coast, 47s. 6d. f.o.b. West Coast—(f.a.s.) Manchester, 42s. to 42s. 6d.; Liverpool, 45s. 6d. to 46s. 6d.; Clyde, 45s. 6d. to 46s. 6d. Toluole, naked, North, 1s. 7½d. to 1s. 8¾d. Coal-tar crude naphtha, in bulk, North, 9d. to 10d. Solvent naphtha, naked, North, 1s. 3¾d. to 1s. 4¼d. Heavy naphtha, North, 1s. to 1s. 0¼d. Creosote, in bulk, North, liquid and salty, 3¼d. to 3½d.; low gravity, 2d. to 2¼d.; Scotland, 3¼d. to 3½d. Heavy oils, in bulk, North, 5½d. to 6d. Carbolic acid, 60's, 2s. 4d. to 2s. 5d. prompt. Naphthalene, £13 to £15. Salts, £5 to £5 10s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

Benzole Prices.

The following are considered to be the market prices to-day:

	s. d.		s. d.	
Crude benzole . . .	0 10	to	0 11	per gallon at works
Motor ,, . . .	1 5	,,	1 6	,, ,, ,,
90 p.ct. ,, . . .	1 7	,,	1 8	,, ,, ,,
Pure ,, . . .	1 10	,,	1 11	,, ,, ,,

Bridgend Gas Company.—The Bridgend Gas Company is paying an interim dividend at the rate of 5 p.ct. per annum, *less* tax.

To Prevent Suicide.—At an inquest at Earlestown (Lancashire) on a man found dead in his kitchen with the taps of the gas stove turned on, the Coroner said that he had received a letter from a man who stated that he had invented a device which made it absolutely impossible for temporarily insane people to use gas ovens for committing suicide. The Coroner remarked that such an invention would be a great asset to the country.

Aberystwyth Gas Company.—The Directors' statement of accounts of the Aberystwyth Gas Company, for the half-year ended June 30, show that the profit for the six months amounts to the sum of £2253, out of which dividends, *less* income-tax, will be paid as follows: On the original shares at the rate of 15 p.ct. per annum; on the new shares at the rate of 10½ p.ct. per annum; on the preference shares at the rate of 5 p.ct. per annum; and on the debenture bonds (interest) at the rate of 4½ p.ct. per annum.

Motherwell Gas Fatality.—A gas leak in his office led to the death of a well-known master plumber, Mr. Walter Alston, at Motherwell on Aug. 23. There had been a leakage of gas underneath the office floor of Mr. Alston's premises at 68, Brandon Street, and he had broken open the floor for the purpose of remedying the fault. He removed a union coupling from the gaspipe, and was replacing it when he was overcome by the gas. The workmen were away on outside jobs at the time, and it was one of Mr. Alston's sons, coming in from school, who discovered his father. Mr. Alston was 62 years of age, and had been in business for many years.

Bridport Gas Company Report.—The report of the Directors of the Bridport Gas Company for the year ended June 30 states that the Directors' policy in maintaining the efficiency of the manufacturing and distribution systems is being fully justified by the continued expansion of the Company's business in all directions. the sales of gas having now reached 52½ million c.ft., an increase of 3 million c.ft. over last year. The sum of £250 has been placed to reserve fund and a similar amount to income-tax reserve fund. Dividends at the rate of 5 p.ct. on the "A" preference, 6½ p.ct. on the "B" cumulative preference, and 10 p.ct. on the ordinary shares, *less* tax, are recommended, carrying forward a balance of £732.

A Notable Anniversary.

The current issue of our well-known contemporary "The Ironmonger" marks the 70th birthday of this highly respected journal, and we would convey to them our heartiest congratulations. As a fellow paper also of some antiquity, we can well appreciate what they say when they state that they are not burdened with any of those feelings that it is customary to associate with three score years and ten. This is neither the place nor the time to re-write the story of the founding of "The Ironmonger," and its allied journal, "The Chemist and Druggist." It is enough to record the fact that both papers were developed from monthly trade circulars, issued by the Brothers Morgan, one of whom, in 1850, had acquired the control of a much older business trading as Halse & Son, druggists' sundriesmen and hardware factors. The business in those days was carried on at 1, Jewin Crescent; but in 1859 more commodious premises were secured in Bow Lane, where that narrow thoroughfare joins Cannon Street, and there the papers were published until 1868, when the offices were moved across the road to 42, Cannon Street. Ten years later, on April 6, 1878, the first weekly issue was published.

London Lighting Industries has been registered, with a capital of £100, to carry on a business of manufacturers, importers, and exporters of incandescent gas mantles, electric globes, and lighting specialities.

Proposed Extensions at Porthcawl.—At a special meeting of the Porthcawl Council on Aug. 20, Mr. R. S. Hayes, J.P., moved that an expert be engaged to prepare a scheme for enlarging the gas-works, either at the present site or in other parts of the town. It was also suggested that an additional gasholder be purchased, and that application be made for a grant from the Ministry of Health. It was agreed that an expert be appointed, and that the Engineer attend with a deputation to the Ministry of Health as early as possible.

Steady Progress at Wellingborough.—The Directors of the Wellingborough Gas Light Company, in their report for the half-year to June 30, state that the profit, after providing for interest and income-tax, amounts to £4216, and the available balance is £10,801. The Directors recommend that out of this sum dividends of 7½ p.ct. on the "original" and 6 p.ct. on the "additional" shares, *less* income-tax, be declared for the half-year. The payment of dividends and tax thereon will absorb the sum of £4206, leaving a balance of £6595 to be carried forward. The price of gas was reduced 3d. per 1000 c.ft., or 0·65d. per therm, from April 1.

Gas Company and Hull Aerodrome.—The special meeting of the Hull Corporation Aerodrome Committee which was held to discuss the project for a municipal aerodrome for Hull on the site of the old Hedon racecourse, four miles east of Hull, decided to offer the East Hull Gas Company an alternative site, which, it is understood, is nearer Hedon than Hull. As was mentioned in our last issue (p. 467), the Gas Company were contemplating building a new gas-works on land not far from the aerodrome site, and the conditions attaching to the Air Ministry's licence provide that there must be no factory or works near the aerodrome which might constitute a source of danger to aircraft. A further meeting was held last Friday.

Satisfactory Results at Aberdeen.—At a meeting of the Gas Committee of Aberdeen Town Council on Aug. 27, estimates for the current year were submitted. The estimated revenue is £255,582, an increase of £9197 over last year. With a surplus over last year of £1642, the total estimated revenue is £257,224. The expenditure on the manufacture of gas, management, &c., amounts to £234,075. There will be no alteration in the price of gas, the rates being as follows: For the first 10,000 c.ft., 2s. 3d. per 1000 c.ft.; for the next 40,000, 2s. per 1000; for the next 50,000, 1s. 10d. per 1000; for the next 150,000, 1s. 9d. per 1000; and for all over 250,000, 1s. 8d. per 1000. According to the accounts for the year to July 31 last, the annual cost of production has fallen in two years by £111,324. In 1926-27 the expenditure on the manufacture of gas in the city was £287,131, and in the year just ended £175,807. A surplus of £35,018 is left over for the year just closed. The ordinary revenue amounted to £246,385, and the expenditure £211,367. After carrying £5000 to the renewal account, making a contribution of £20,000 towards capital expenditure, and paying annuities and interest, £1642 is carried forward to next year.

During an operation at the Weston-super-Mare Hospital the electric light in the operating theatre suddenly failed, at the most critical stage of the operation. The situation was happily saved by a sister who had lighted the gas prior to the operation in order to warm the room.

The Leamington Priors Gas Company have announced that the noise nuisance at their works has now ceased. Action has been taken to secure an abatement of the constant drone in the new retort house, following a threat from the Town Council that proceedings would be taken in the High Court to secure an injunction.

A verdict of "Accidental death" was returned on Eric Halligan (29) and his wife Eva Halligan (24), who were found gassed and dead in a bedroom at their apartments in Peter Street, Blackpool, on Aug. 24. Police-constable Hargreaves, who went to the house after the tragedy and tried artificial respiration, advanced the theory that Mrs. Halligan, in opening the bedroom window to tell the landlady's son that the gas was off at the meter, caught the gas jet with a curtain and turned it on. Later, the landlady's son turned on the gas at the meter. The couple, not being aware that the tap was turned on, were gassed in their sleep.

STOCK AND SHARE LIST.

[For Stock Market Report, see earlier pages.]

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr	Dividends. Last Hf. Yr.	NAME.	Quotations. Aug. 30.	Rise or Fall on Week.	Transactions Lowest and Highest Prices.
£			%p.a	% p.a.				
171,978	Stk.	Aug 15	5	5	Aldershot 5 p.c. max. C. .	70—75	..	..
412,992	,,	,,	4	4	Do. 4 p.c. Pref. . .	73—76	..	..
1,551,848	,,	Apl. 11	7½	7½	Alliance & Dublin Ord. .	96—99	..	..
274,000	,,	July 11	4	4	Do. 4 p.c. Deb. . .	62—65	..	..
535,535	,,	Aug. 29	7	7	Barnet Ord. 7 p.c. . . .	112—115*	−2½	114½
800,000	1	May 9	1/4½	1/4½	Bombay, Ltd.	18/6—20/6	..	..
172,500	10	Aug. 29	8½	9	Bournemouth 5 p.c. . . .	12¾—13¼*	−¼	..
500,050	10	,,	7	7	Do. B 7 p.c. . .	12—12½*	−¼	..
439,160	10	,,	6	6	Do. Pref. 6 p.c. .	10½—11*	−¼	..
50,000	Stk.	July 11	8	8	Do. 8 p.c. Deb. .	54—57	..	..
163,025	,,	,,	4	4	Do. 4 p.c. Deb. .	72—75	..	..
857,900	,,	Aug. 29	7½	7½	Brighton & Hove 6 p.c. Con.	113—116*	..	..
371,880	,,	,,	6½	6½	Do. 5 p.c. Con.	100—103*	..	100½
1,387,500	,,	July 25	8	8	Bristol 5 p.c. max. . . .	88½—89½a	+½	..
555,000	,,	Apl. 11	8	7½	British Ord.	117—120	..	..
100,000	,,	June 27	7	7	Do. 7 p.c. Pref. . . .	112—117	..	..
100,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. .	71—74	..	..
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. .	94—97	..	96½
100,000	10	May 30	6	6	Cape Town, Ltd. . . .	9—10	..	..
100,000	10	Apl. 24	4½	4½	Do. 4½ p.c. Pref. . .	6½—7½	..	6½—7½
150,000	Stk.	June 27	4½	4½	Do. 4½ p.c. Deb. . .	71—76	..	..
666,888	,,	July 25	6	6	Cardiff Con. Ord. . . .	98—101	+3	99½
357,888	,,	June 27	7½	7½	Do. 7½ p.c. Red. Deb. .	99—102	..	..
187,150	,,	Aug. 15	6½	6	Chester 6 p.c. Ord. . . .	86—91b	..	..
98,936	1	May 9	12/-	12/-	Colombo Ltd. Ord. . . .	35/—37/-	..	..
24,496	1	,,	1/4½	1/4½	Do. 7 p.c. Pref. . .	30/—32/-	..	..
575,402	1	Apl. 11	1/9½	1/9½	Colonial Gas Assn. Ltd. Ord	24/6—26/6	..	..
187,848	1	,,	1/7½	1/7½	Do. 8 p.c. Pref.	20/6—22/6	..	..
9,073,380	Stk.	July 25	7	8	Commercial Ord.	93—96	..	94—95
475,000	,,	June 13	8	8	Do 8 p.c. Deb. .	56—59	..	65½
787,650	,,	Aug. 15	7	7	Croydon sliding scale . .	108—111	..	..
499,100	,,	,,	5	5	Do. max. div. . . .	81—84	..	..
543,270	,,	Aug. 29	10	7	Derby Con.	118—121e*	+5	..
85,000	,,	June 27	4	4	Do. Deb.	68—71e	..	..
989,000	,,	Aug. 29	5	5	East Hull Ord. 5 p.c. . .	73—75*	..	..
1,009,180	10	Mar. 21	†4	†7	European, Ltd.	15—17	..	16—16½
19,708,488	Stk.	July 25	8½	8½	Gas Light & Coke 4 p.c. Ord.	18/1½—18/7½f	−/1½	18/3—18/9
2,600,800	,,	,,	8½	8½	Do. 8½ p.c. max. . . .	61—63	..	61½
4,187,020	,,	,,	4	4	Do. 4 p.c. Con. Pref. .	73—75	..	73½—75
5,695,830	,,	June 13	8	8	Do. 8 p.c. Con. Deb. .	56½—59½	..	..
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. .	97—100	..	99—99½
82,500	,,	Aug. 29	7	7	Hastings & St L. 5 p.c. Conv	98—103*	..	..
248,749	,,	,,	5½	5½	Do. 5½ p.c. Conv.	77—82*	−3	..
70,000	10	Apl. 24	†10	†10	Hongkong & China, Ltd. .	14—15	..	14½—14½
212,800	Stk.	Aug. 29	6	6½	Hornsey Con. 5½ p.c. . .	84—87*	−2	..
1,976,000	,,	May 30	10	20	Imperial Continental Cap.	405—425	+25	385—425
225,120	,,	Aug. 16	8½	8½	Do. 8½ p.c. Red. Deb.	69—72	..	..
335,242	,,	Aug. 15	7½	8	Lea Bridge 5 p.c. Ord. . .	115—118	..	..
2,145,963	,,	Aug. 15	6½	6	Liverpool 5 p.c. Ord. . .	93—94b	..	..
600,000	,,	Mar 21	†	†	Do. 7 p.c. Red. Pref.	102—104b	..	..
166,766	,,	Aug. 29	8	9	Maidstone 5 p.c. Cap. . .	122—127*	−2	..
63,480	,,	June 27	3	3	Do. 3 p.c. Deb. . .	53—56	..	..
15,000	b	June 13	18	110	Malta & Mediterranean .	5½—6	..	..
392,000	—	Apl. 2	—	5½	Metrop'ts'n (of Melbourne) 5½ p.c. Red. Deb. . . .	100—102	..	..
841,930	Stk.	May 30	†5	†9	Montevideo, Ltd. . . .	105—108	..	106½
2,051,818	,,	July 25	5	5½	Newcastle & Gateshead Con.	16/9—17/3d/	..	..
682,856	,,	,,	4	4	Do. 4 p.c. Pref. .	70½—71½d	..	..
691,705	,,	June 27	8½	8½	Do. 8½ p.c. Deb. .	68—69d	..	..
131,780	,,	Aug. 29	7/1/0	7½	North Middlesex 6 p.c. Con.	105—110*	..	105½
800,000	,,	Apl. 24	9	7	Oriental, Ltd.	115—120	..	118½
205,162	,,	June 27	8	8	Plym'th & Stonehouse 5 p.c.	110—113	..	111
424,416	,,	Aug. 29	8½	8	Portsm'th Con. Stk. 4 p.c. Std.	113—115*	..	..
241,446	,,	,,	5	5	Do. 5 p.c. max.	80—85*	−2	..
2,334,454	1	June 27	—	‡5	Primitiva Ord.	35/- —37/-	..	35/4½—36/-
244,500	100	June 8	4	4	Do. 4 p.c. Red. Deb. . .	92—95	..	..
695,000	Stk.	July 25	4	4	Do. 4 p.c. Red. Deb. 1911	79—82	..	..
416,845	,,	June 27	4	4	Do. 4 p.c. Cons. Deb. . .	79—82	..	82
150,000	10	Mar. 21	6	6	San Paulo 6 p.c. Pref. . .	8½—9	..	..
1,736,968	Stk.	Mar. 21	6½	6½	Sheffield Cons.	108—110e	..	..
95,000	,,	Jan. 10	4	4	Do. 4 p.c. Deb. . . .	74—77e	..	..
90,000	10	June 13	‡4	‡4	South African	4—6	..	..
8,609,895	Stk.	July 26	7½	5	South Met. Ord.	101—103	..	100½—102
500,000	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	106—107	..	..
1,695,445	,,	July 11	8	8	Do. 8 p.c. Deb. . .	57—60	..	..
784,000	,,	Mar. 7	6½	6½	Do. 6½ p.c. Red. Db.	100—102	..	..
91,500	,,	Aug. 15	8½	8½	South Shields Con. . . .	103—104d	..	..
1,543,795	,,	July 25	6½	6½	South Suburban Ord. 5 p.c.	103—106	..	..
468,837	,,	June 27	5	5	Do. 5 p.c. Deb.	95—98	..	..
647,740	,,	Aug. 15	5	5	Southampton Ord. 5 p.c. max.	75—78	..	..
121,278	,,	June 27	4	4	Do. 4 p.c. Deb.	70—73	..	..
179,014	,,	July 25	8	8	Sutton Ord.	115—118	..	..
67,828	,,	June 27	—	5	Do. 5 p.c. Deb. . .	89—92	..	..
260,000	,,	Feb. 21	7	7	Swansea 7 p.c. Red. Pref. .	100—102*	..	..
900,000	,,	June 27	6½	6½	Do. 6½ p.c. Red. Deb.	100—102	..	..
1,002,275	,,	Aug. 15	6⅝	6⅝	Tottenham District Ord. .	105—108	..	107
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref.	97—100	..	..
181,355	,,	June 13	4	4	Do. 4 p.c. Deb.	74—77	..	..
389,024	,,	Aug. 29	7	7	Uxbridge, Maidenhead, & Wycombe 5 p.c. . . .	93—98*	..	..
86,880	,,	,,	5	5	Do. 5 p.c. pref. .	85—90*	−3	..
80,000	,,	July 11	9	9	Wandsworth, Wimbledon, and Epsom— Wandsworth A 5 p.c. .	144—147	..	..
355,656	,,	,,	7½	7½	Do. B 5½ p.c. .	122—127	..	..
423,635	,,	,,	6⅜	6⅜	Do. C and New	100—105	..	102
362,000	,,	,,	7½	7½	Do. Wimbledon 5 p.c. .	112—117	..	115
98,000	,,	,,	7⅝	7⅝	Do. Epsom 5 p.c. . .	123—128	..	..
200,000	,,	,,	5	5	Do. 5 p.c. Pref . . .	87—92	..	..
88,416	,,	June 27	3	3	Do. 3 p.c. Deb. . . .	54—57	..	..
184,742	,,	,,	4	4	Do. 4 p.c. Deb. . . .	74—77	..	..
307,500	,,	,,	5	5	Do. 5 p.c. Deb. . . .	93—96	..	..

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of Stock. * Ex. div. † Paid free of income-tax. ‡ For year.

FINANCIAL.

WAKEFIELD GASLIGHT COMPANY.

ISSUE of £25,000 5½ PER CENT. MORTGAGES Pursuant to the Wakefield Gas Act, 1912, and the Gas Undertakings Act, 1929.

THE Directors of the Wakefield Gaslight Company are prepared to receive TENDERS for 5½ Per Cent. MORTGAGES repayable in 5, 7, or 10 years at the option of the Mortgagee.

Tenders may be for sums of £50 or multiples thereof.

The Mortgages are a first charge on the Undertaking in conjunction with the existing Mortgages, and the amount of Mortgages outstanding, including this issue, will be £81,206.

The average profit to Revenue Account for the past 5 years, after payment of Income-tax, is Four times the amount required to pay Interest on the Loan Capital.

The Company has also a large Reserve Fund and a Special Purposes Fund, both invested in Trustee Securities.

A brokerage of 10s. per cent. will be paid on allotments bearing the name of a Banker, Solicitor, or Broker.

Tenders must be sent in not later than Monday, the 30th of September.

Prospectus and Form of Tender will be sent on Application to the undersigned.

By Order of the Board of Directors,
R. B. WILSON,
Secretary.

Gas Offices,
Warrangate,
Wakefield,
Aug. 21, 1929.

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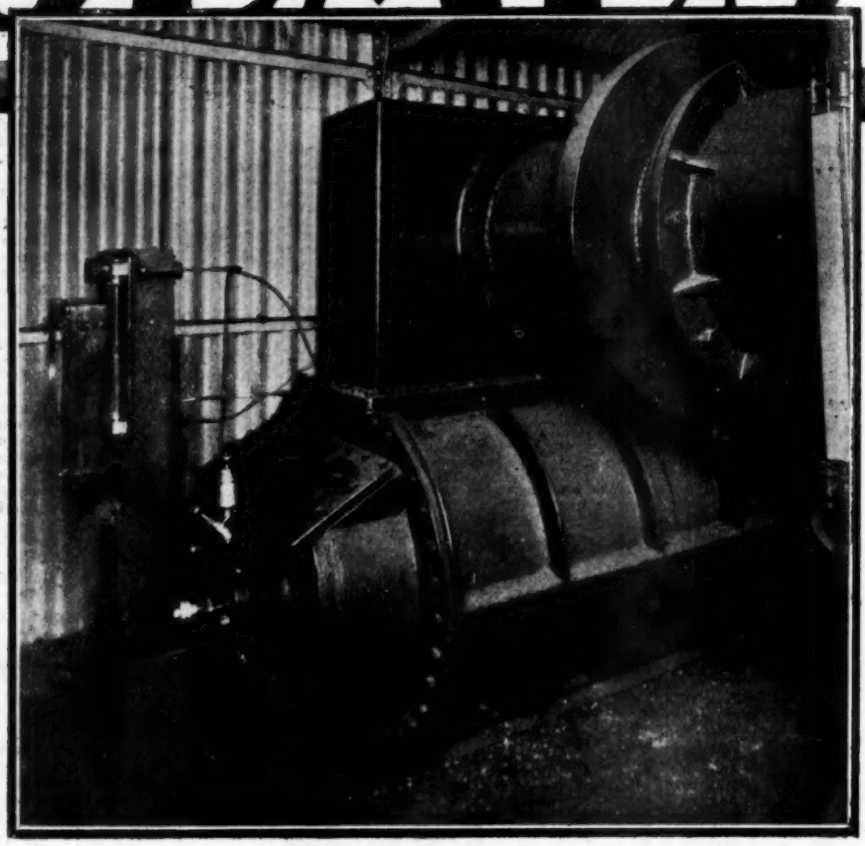

This photograph serves to illustrate the small space occupied by these Station Meters. Note the capacity (7,800,000 per day). The illustration also emphasises the small cost involved in foundations and buildings. The inlet connection shown has a diameter of 24".

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